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This is a report of the development of a system of scoring the Strong Vocational Interest Blank (SVIB) for Men. The scales which were developed supplement the occupational scales. Their main concern is identifying important clusters of interest which can be generalized beyond a single occupation. Development of the scales was based on an item intercorrelation matrix from the SVIB. Clusters of items with high intercorrelations became the 22 Basic Scales. The psychometric characteristics of the scales are presented and discussed. (NS)

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A Set of Basic Interest Scales for the Strong Vocational Interest Blank for Men

by

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The regular scales now in use for the Strong Vocational Interest Blank (SVIB) were developed by comparing the responses of men in specific occupations with those of a men-in-general group. Those items selected more often by the occupational sample serve as a scale for identifying the characteristic interests of the men in that occupation. These are usually termed "empirical" scales, and the scores provide an index of similarity between the individual's interests and the interests of men in the specified occupations. A substantial amount of research (see, for example, Strong, 1943, 1955; Darley and Hagenah, 1955; Campbell, 1966) has shown that these scores are useful in psychological assessment projects and in counseling situations.

Problems with the Empirical SVIB Scales

The major advantage of these empirical scales is that they include all of the discriminating items for each occupation in one scale; this makes interpretation for that one occupation fairly easy. With these scores, a counselor can say something like, "You have interests similar to lawyers." However, the nature of empirical scales makes further psychological interpretation difficult. If the individual asks the obvious, "What does it mean to have interests similar to lawyers?", the counselor must fall back on what he has learned about lawyers from other sources. Although the related scales on the SVIB profile provide some general flavor, interpretation is still shallow except when done by well-trained, sophisticated counselors who have had considerable experience in working with the SVIB, and who have studied the research literature.

A second major disadvantage is that there is no limit to the number of empirical scales; in theory one could be developed for each occupation...but there are over 20,000 occupations listed in the Dictionary of Occupational Titles. While one can, in only partial fantasy, visualize a computerized system where this information would be available for hundreds of occupations, this is still far beyond our current capabilities. In current practice, to compensate for this relatively narrow coverage of the occupational world, the counselor usually extrapolates from the available SVIB scales to other occupations not listed on the profile. For example, if a student inquires about geology, scores on the Engineer and Chemist scales are probably relevant. Some such extrapolation will be inevitable, no matter what the final method used, but it should be as easy and direct as possible.

A third disadvantage of these empirical scales is that they are difficult to work with in research studies. If an investigator wishes to study men who have survived in a specific occupational setting versus those who have not, he finds it cumbersome to compare these two groups on all of the 60 current empirical scales. While he can, and usually does, calculate the mean differences on each of the scales, the resulting statistics do not offer either a parsimonious nor easily interpretable method of understanding what distinguishes between the interests of these two samples.

The empirical success of the SVIB has created most of these problems. Because the scales are useful and do provide an easily interpretable score for a specific occupation, there has been considerable pressure to build more of them, further increasing the complexity of the profile. From all indications, this will continue as more occupations feel the need for self-study. This is good for this detailed psychometric information on a wide variety of jobs is essential, but this prospect makes it even more imperative to develop a simpler way to summarize the results.

What both the counselor and researcher need is another system of scoring to supplement the occupational scales, a system containing relatively few scales, but scales which could be used to generalize beyond a single occupation.

Clark, in his research with the Minnesota Vocational Interest Inventory, has shown that one way to do this is to work with measures that are homogeneous in content (Clark, 1961). Each of his Homogeneous Scales (or Area scales as they are called on the profile) reflects interests in one type of activity or in closely related activities; thus, they are "pure" content scales.

Such a set of scales has been constructed for the Men's Form of the SVIB; this is a report of their development and of their psychometric characteristics. Because this was an attempt to identify the important clusters of interests represented in the SVIB, these scales have been termed "Basic Interest" scales.

Basic Scale Development

To build these scales, an item intercorrelation matrix was generated for the SVIB and, from this matrix, clusters of items with high intercorrelations were identified. The items in these clusters became the Basic Scales.

Set (1) and Set (2) of the Basic Scales

Actually, two sets of scales were constructed, the first using the 291 items common to all (1927, 1933, 1938, and 1966) editions of the SVIB booklet , the second using all 399 items of the 1966 revised form.

Although the first set will usually not be used in current projects, either for counseling or research, three factors dictated its development: first, practically all of the SVIB criterion groups were studied with either the 1927, 1933 or 1938 booklets; second, many longitudinal studies have old data on an earlier booklet and current data on a later form; third, a more practical concern, despite the efforts of the publisher and the scoring services, there inevitably are users who have not yet switched to the revised (1966) form. For all of these situations, a set of scales compatible with both early and recent booklets is needed.

The second set of basic scales is simply the first set expanded to include the items added to the SVIB in the 1966 revision. In this revision, a definite attempt was made to improve the coverage in areas relatively neglected in the original item pool such as art, religion, and music. As a result, scales for those areas are longer and more adequate in the second set. Unless confronted by one of the situations in the preceding paragraph, current users of the SVIB should use this second set.

Because most of the normative data presented here are from groups tested before 1966, only the Set 1 scales are used unless specifically noted otherwise.

Eliminated Items

Two restrictions were applied to the individual items before scale construction began. First, to eliminate the highly popular and unpopular ones, no item was used if any of the responses, LIKE, INDIFFERENT, or DISLIKE,had less than 15 percent response among a sample of men-in-general. Second, none of the items numbered 281-320 were included. Those are the items grouped in tens where the respondent is to select the three he likes best, the three he likes least, and mark the remaining four indifferent. This format is troublesome as one or two percent of the respondents fill in this section incorrectly. Another one percent or so, aggravated by this forced choice format, write some hostile comment in the margin and refuse to fill in any of the items. To solve these problems, and because these items are less efficient than the regular L-I-D items, this section will probably be removed in some future revision. In anticipation of that move, these items were not used in these basic scales. Only a few items were affected by these restrictions.

Item Intercorrelations

The next step in scale construction was to generate an item intercorrelation matrix. Using the responses from Strong's group of 500 Men-in-General, a Pearson product moment correlation was calculated between each pair of items by assigning the values +1, 0, and -1 respectively to the LIKE, INDIFFERENT, and DISLIKE responses, then treating one item as the X axis, the other as the Y. Examples of three such correlations are shown in Table 1, including a high positive, a low positive, and a high negative correlation. As there were almost no large negative correlations, except between forced-choice items where they were artifically created, -.19 qualifies here as "high."

Insert Table 1 about here

The next step was to decide exactly how to build the scales. While we wanted to identify clusters of items with "high" intercorrelations, we initially had little idea of what to call high. To gain some knowledge here, a frequency distribution, using all of the correlations in the item intercorrelation matrix, was constructed; it is reproduced in Figure 1. To provide a replication, an analogous distribution is included for the item intercorrelations from the Women's Form of the SVIB. The two distributions are remarkably similar.

Several conclusions can be drawn from the distributions in Figure 1:

1. The item intercorrelations were generally low, mostly around zero, practically all between ±.20.
2. The distributions were slightly positively skewed. This mild effect could be caused by any of several factors such as a slight response set, or over-representation of some item content areas.
3. There were not many high correlations. In the initial matrix, the highest were .79 between the items "Mathematics" and "Arithmetic," and .78 between "Surgeon" and "Physician," only five percent were above .25, and only one percent above .35. This strongly suggests that the items are relatively specific, that the respondents pay a great deal of attention to the unique aspects of each item.

Insert Figure 1 about here

Table 1

Sample SVIB Item Intercorrelations[a]

Item 101 (Algebra) vs 102 (Arithmetic)--High Positive Correlation

		Algebra				
		L	I	D	Total	
	L	51	12	06	69	
Arithmetic	I	03	11	06	19	r = .63
	D	01	01	10	12	
Total		55	24	22	100	

Item 115 (Geometry) vs 144 (Chess)--Low Positive Correlation

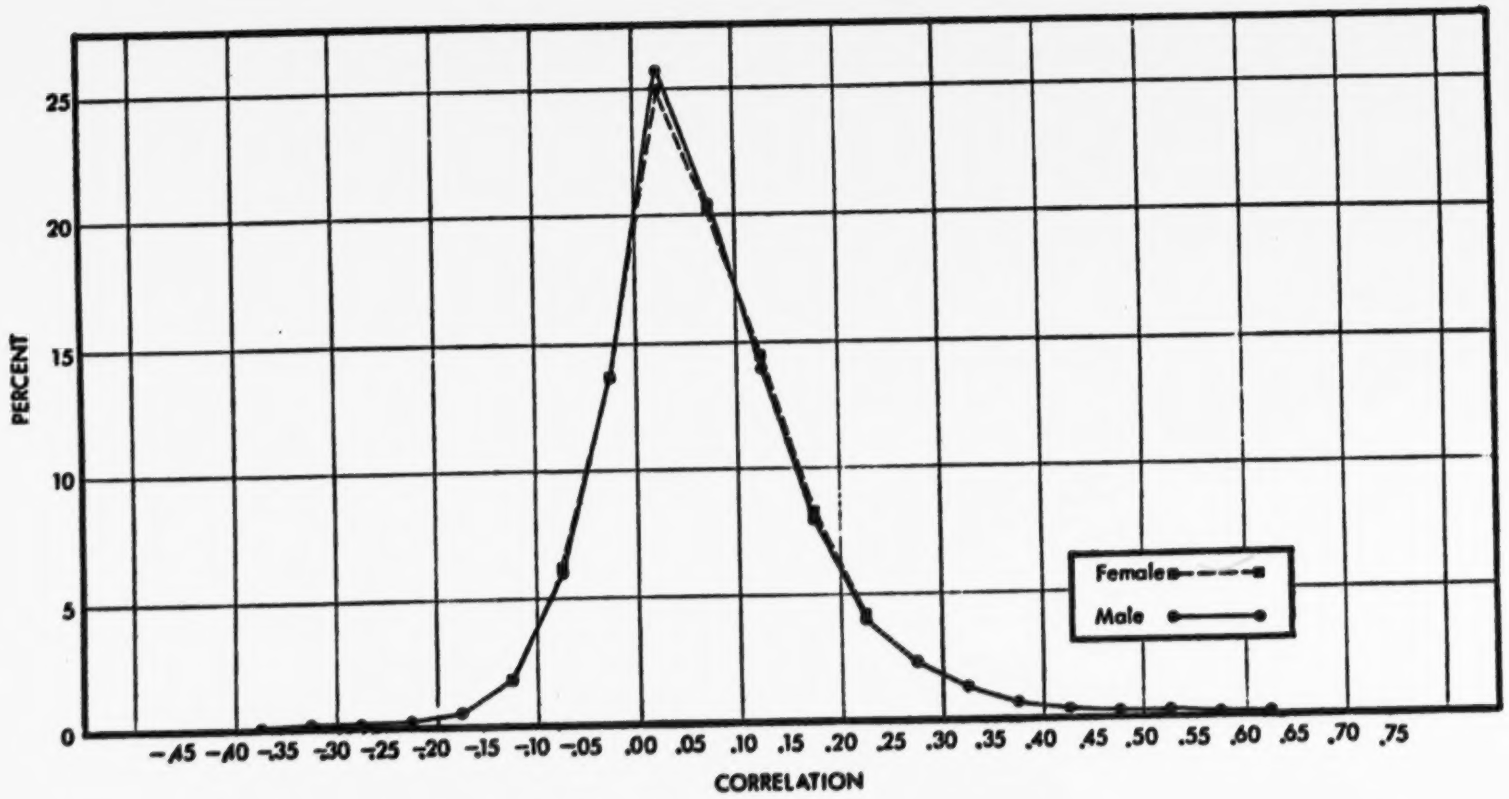
		Geometry				
		L	I	D	Total	
	L	16	04	03	23	
Chess	I	24	12	06	42	r = .21
	D	15	11	09	35	
Total		55	27	18	100	

Item 1 (Actor) vs 349 (Listening to a story vs Telling a story)--High Negative Correlation

		Actor				
		L	I	D	Total	
	L	09	19	24	52	
Listening	I	06	10	16	33	r = -.19
	D	08	04	04	15	
Total		23	33	45	100	

[a] = Each cell entry is the proportion of 500 men-in-general selecting that combination of responses.

Figure 1


PERCENT
25
20
15
10
5
0
−.45 −.40 −.35 −.30 −.25 −.20 −.15 −.10 −.05 .00 .05 .10 .15 .20 .25 .30 .35 .40 .45 .50 .55 .60 .65 .70 .75
CORRELATION
Female
Male

4. There were no large negative correlations. This indicates that, at the item level, there is little tendency for people who like one item to all dislike another. (This is peculiar for large negative correlations certainly appear at the scale level, ranging up to -.88 between the Social Science Teacher and Engineer scales.) In constructing the Basic Scales, only a few items with negative correlations were included, even though a lower (absolute) value of correlation was accepted.

After the matrix had been calculated, and it required 3 hours with a CDC 1604 computer, various searching techniques were used, with the further aid of the computer when possible, to locate smaller matrices containing perhaps 5-25 items, all having high intercorrelations. Using Figure 1 as a guide, "high" was defined as above .30 though it was sometimes necessary to drop lower. The absolute minimum was set at .20 but even that was violated occasionally, especially when the correlations were negative.

The Item Composition of the Basic Scales

Twenty-two Basic Scales were finally constructed; item intercorrelation matrices for each of them are listed in Tables 2 to 23. The items in the tables were sometimes abbreviated for easier presentation here.

Insert Table 2 to 23 about here

Table 2

Adventure Cluster

		211	14	231	12	334	86	277	337	321
211	Pursuing bandits in a sheriff's posse		24	26	37	23	44			
14	Airplane Pilot	25		27	37	16	22			
231	Climbing along edge of precipice	23	12		25	19	10			
12	Auto Racer	28	40	11		22	32			
334	Taking a chance	13	05	16	17		11			
86	Secret Service Man	42	29	15	30	14				
** 277	Men who live dangerously	21	22	20	25	16	27			
** 337	Thrilling, dangerous activities	36	18	26	28	62	25	31		
** 321	Airline Pilot	18	51	13	23	12	18	22	30	

** These are the new items from the 1966 booklet, added to develop the Set 2 scales. See text.

Table 3

Agriculture Cluster

		37	102	342	345	76	191	230	162	214	150
37	Farmer		65	24	22	64	28	-34			
102	Agriculture	58		27	28	44	32	-18			
342	Outside work	21	27		40	30	26	-25			
345	Physical activity	20	19	40		18	25	-10			
76	Rancher	67	54	26	18		29	-30			
191	Handling horses	28	28	20	16	35		-16			
230	Living in a city	-24	-17	-24	-18	-21	-06				
OUT 162	Horseback riding	17	20	13	11	27	71	-01			
UT 214	Forest ranger	34	37	23	18	37	24	-19	21		
UT 150	Camping out	18	20	20	13	18	23	-13	24	39	

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* Items considered for inclusion in cluster, but discarded for various reasons. See text.

Table 4

Art Cluster

		5	20	43	104	163	194	233	84	141	39	183	253	263	352
5	Artist		49	45	53	37	35	30	56						
20	Cartoonist	54		37	35	28	21	22	40						
43	Interior Decorator	38	26		38	26	42	35	46						
104	Art	65	46	38		50	38	30	38						
163	Art Galleries	49	36	34	50		32	36	37						
194	Decorating with flowers	33	21	42	35	36		39	33						
233	Looking at antique furniture	30	15	26	33	42	39		33						
84	Sculptor	67	48	37	57	51	30	31							
141	Sketching pictures of wild animals	45	35	27	46	41	35	29	42						
39	Art Museum Director	48	38	39	48	50	26	31	59	38					
183	Magazines about art and music	44	29	29	49	60	34	35	48	37	46				
253	Artistic men	50	31	39	49	40	33	30	45	34	39	40			
263	Prominent artists	44	31	20	39	47	27	36	44	33	44	50	56		
352	Music and art events vs athletic events	35	21	19	33	42	15	18	38	26	41	50	22	34	

Table 5

Business Management Cluster

		33	35	58	65	81	206	226	347	196	42	85	96	177	278
33	Employment Manager		44	27	44	36	30	29	-15	44	33	34			
35	Factory Manager	47		49	41	34	32	32	-10	29	28	28			
58	Manufacturer	28	54		35	38	25	38	-11	27	18	22			
65	Office Manager	57	48	34		50	33	36	-24	28	40	43			
81	Sales Manager	47	42	37	42		36	42	-24	26	34	44			
206	Meeting and directing people	33	27	18	28	36		36	-17	39	31	26			
226	Developing business systems	30	34	34	39	41	29		-22	33	19	26			
347	Technical vs Supervisory Responsibility	-30	-22	-17	-28	-37	-28	-26		-17	-18	-09			
196	Interviewing men for a job	50	31	21	40	39	45	33	-27		22	22			
42	Hotel Manager	44	33	22	38	38	31	20	-30	30		35			
85	Manager, Chamber of Commerce	48	34	25	45	42	32	31	-22	30	38				
** 96	Travel Bureau Manager	41	27	25	35	32	27	19	-17	25	43	39			
** 177	Business methods magazines	34	37	37	33	45	24	48	-28	34	21	31	21		
** 278	Prominent business men	28	31	33	30	35	29	30	-24	29	23	26	22	37	

Table 6

Law/Politics Cluster

		41	47	48	51	52	72	160	359	323	356	59
41	Governor of a state		51	42	31	35	51					
47	Judge	55		41	38	48	34					
48	Labor Arbitrator	39	48		33	22	39					
51	Lawyer, Criminal	45	50	35		42	36					
52	Lawyer, Corporation	34	46	30	52		22					
72	Politician	62	48	44	43	34						
* 160	Electioneering for office	50	33	35	34	28	65					
* 359	Dog trainer vs Parole Officer	-25	-23	-26	-23	-12	-24	-18				
T 323	Taxi driver vs policeman	-16	-14	-11	-23	-13	-11	-13	17			
T 356	Warden of a prison	-01	-00	01	-06	03	-03	-09	10	10		
T 59	High School Principal	38	44	33	28	29	37	26	-24	-12	04	

Table 7

Mathematics Cluster

		101	103	107	115	120	128	148	122	24
	101 Algebra		63	61	67	75	36			
	103 Arithmetic	65		48	51	79	32			
	107 Calculus	62	47		56	59	44			
	115 Geometry	67	50	62		65	50			
	120 Mathematics	76	77	63	66		42			
	128 Physics	50	38	55	53	48				
OUT	148 Solve mechanical puzzles	35	35	35	34	37	30			
OUT	122 Mechanical Drawing	26	31	31	35	36	35	41		
OUT	24 Civil Engineer	26	27	35	34	32	31	26	39	

Table 8

ITEM INTERCORRELATION MATRIX FOR MECHANICAL CLUSTER

	19	56	94	186	189	190	122	132	148	187	121	185	188	368	13	32	45	55	61	30	88	24	180	98	128					
19 Carpenter		51	47	40	65	40	39	55	26	35	46	36	36	33	49	28	26	37	32	38	42	32	24	37	30					
56 Machinist	47		66	47	44	62	41	55	34	55	40	48	48	39	63	45	37	57	45	36	51	36	29	45	29					
94 Toolmaker	49	73		46	46	46	40	52	37	42	36	35	35	36	54	39	35	40	51	40	57	33	18	55	32					
186 Repairing a clock	35	45	49		48	48	39	42	44	58	36	60	60	43	40	35	33	30	32	33	30	29	25	39	28					
189 Cabinetmaking	57	43	49	48		46	47	57	33	41	51	40	47	41	36	29	35	30	31	40	39	34	31	39	34					
190 Operating machinery	42	57	55	51	52		39	49	43	60	42	45	56	43	47	38	32	37	37	26	32	28	38	27	34					
122 Mechanical Drawing	32	41	42	38	44	40		62	41	35	61	38	39	39	28	31	27	25	30	55	31	39	32	22	35					
132 Shop Work	50	55	58	45	58	61	57		34	44	64	42	44	44	42	37	33	30	36	45	43	31	35	28	38					
148 Solving mechanical puzzles	23	33	35	40	31	37	33	30		39	32	38	37	36	27	36	39	23	30	33	30	26	34	29	30					
187 Adjusting a carburetor	33	52	55	66	45	62	33	52	39		37	63	69	40	54	34	30	35	37	29	27	30	36	29	24					
121 Industrial Arts	40	38	41	30	44	40	59	59	25	31		37	39	42	35	24	29	22	24	40	30	25	33	20	27					
185 Making a radio or Hi Fi set	29	38	39	55	45	43	35	44	39	52	32		64	43	41	42	36	30	29	30	24	32	33	34	24					
188 Repairing electrical wiring	32	45	47	62	53	60	39	50	37	67	30	53		41	38	39	29	31	27	31	29	25	34	28	24					
368 Have mechanical ingenuity	27	39	40	43	41	46	37	44	36	45	34	44	46		26	28	41	25	22	28	26	20	32	22	34					
13 Auto Mechanic	47	59	55	46	36	53	29	47	32	62	32	36	43	35		36	28	45	39	27	46	24	26	42	27					
32 Electrical Engineer	29	49	49	41	38	40	36	36	38	44	28	47	48	33	40		41	40	41	34	42	56	27	27	37					
45 Inventor	24	30	32	30	33	34	19	26	31	30	21	36	32	41	25	40		30	34	29	33	25	32	28	32					
55 Locomotive Engineer	37	53	46	28	23	38	25	34	18	34	28	20	23	13	42	29	17		37	18	39	23	24	35	25					
61 Mining Superintendent	17	28	30	19	17	30	22	25	22	27	24	20	24	18	29	30	25	28		36	50	40	17	34	28					
30 Draftsman	30	42	45	34	32	33	62	41	27	33	41	28	28	27	33	40	17	31	22		38	37	24	34	27					
88 Shop Foreman	33	52	54	29	29	42	33	42	25	40	34	22	31	23	41	34	15	41	44	33		29	21	41	37					
24 Civil Engineer	30	41	43	24	31	38	36	34	31	32	31	31	30	30	34	57	34	29	36	39	30		14	24	31					
180 Popular mechanics magazines	32	45	45	45	39	50	43	51	38	49	42	42	46	42	38	34	29	31	25	33	36	28		15	21					
98 Watchmaker	34	46	54	49	31	30	25	30	25	36	26	30	30	23	42	33	23	38	24	31	31	24	27		24					
128 Physics	17	24	27	28	20	22	22	19	36	26	17	31	28	28	20	37	33	14	23	18	14	38	24	19						
** 16 Designer, Electronic equipment	26	38	40	33	32	31	29	27	39	34	26	48	36	34	37	65	45	22	30	34	26	50	30	33	41					
** 22 Electronics Technician	29	45	46	36	32	37	32	34	36	43	27	49	40	29	40	68	37	29	28	40	31	54	35	36	35	68				
**216 Looking at things in a hardware store	33	34	36	30	37	39	25	39	23	32	29	28	36	26	26	24	19	25	21	19	24	25	43	18	18	20	23			
OUT 34 Geologist	30	24	26	20	27	18	15	19	21	19	19	25	21	18	24	38	36	20	31	21	15	44	19	23	34	36	37	21		
OUT 87 Computer operator	15	31	31	19	12	24	20	13	21	22	09	17	19	04	24	32	13	24	20	31	35	22	17	24	18	30	36	12	17	
OUT 166 Science fiction magazines	09	21	16	20	11	20	19	12	23	24	15	25	19	21	18	24	22	19	18	22	16	-08	33	21	17	26	26	14	15	22

Table 9

Medical Service Cluster

		29	67	69	93	130	136	192	256	264	49	356	64
29	Dentist		40	40	45	21	23	25					
67	Pharmacist	42		31	30	23	30	21					
69	Physician	38	32		78	31	23	36					
93	Surgeon	42	32	76		27	24	38					
130	Physiology	22	26	39	33		34	28					
136	Zoology	17	24	28	29	48		15					
192	Giving first aid assistance	49	46	47	46	41	38						
OUT 256	Physically sick people	11	16	14	12	13	13	54					
OUT 264	Outstanding scientists	11	15	20	18	22	28	07	07				
OUT 49	Laboratory Technician	25	52	16	23	17	25	40	06	25			
OUT 356	Superintendant of hospital	12	10	22	20	20	13	28	04	07	06		
OUT 64	Psychologist	14	15	25	20	35	19	35	05	14	14	10	

Table 10

Merchandising Cluster

			80	99	81	219	18	42	85	220	65	92	68	346	96	177	218
	80	Retailer		59	48	51	52	36	40	48	44	30					
	99	Wholesaler	55		58	44	48	33	45	39	47	41					
	81	Sales Manager	52	48		47	48	34	44	44	50	38					
	219	Buying merchandise for a store	53	49	50		54	32	31	61	32	26					
	18	Buyer of merchandise	54	52	51	58		36	33	44	44	32					
	42	Hotel Manager	36	30	38	38	36		35	32	44	32					
	85	Manager, Chamber of Commerce	34	36	42	36	36	38		30	47	41					
	220	Displaying merchandise in a store	41	39	34	59	42	31	33		32	26					
	65	Office Manager	37	39	42	36	41	38	45	27		35					
	92	Stockbroker	29	34	37	30	31	26	30	20	26						
**	68	Public Relations Man	35	35	53	38	41	42	51	36	42	31					
**	346	Work in an import-export business	28	30	36	31	35	33	24	28	20	21	37				
**	96	Travel Bureau Manager	34	31	32	32	33	43	39	27	35	28	41	27			
**	177	Business Methods Magazines	32	36	45	34	37	21	31	27	33	38	34	19	21		
OUT	218	Looking at things in a clothing store	24	22	26	39	22	19	20	34	19	20	28	22	20	12	

Table 11

Military Activities Cluster

		4	123	151	210	237
4	Military Officer		49	42	59	
123	Military Drill	52		66	68	
151	Drilling in a military company	53	81		61	
210	Drilling soldiers	59	68	74		
** 237	Military men	52	44	43	47	

Table 12

Music Cluster

		62	63	66	167	183	352	152	157	149	261
62	Musician		50	57	40						
63	Music Teacher	56		52	27						
66	Orchestra Conductor	58	51		34						
167	Symphony Concerts	39	34	47							
** 183	Magazines about art and music	43	41	46	54						
** 352	Music and art events vs athletic events	34	27	35	48	50					
** 152	Playing the piano	49	37	42	30	30	22				
** 157	Jazz Concerts	26	20	28	25	30	08	29			
** 149	Religious Music	28	30	26	34	32	21	21	13		
** 261	Musical geniuses	43	34	44	39	46	33	35	23	25	

Table 13

Nature Cluster

		37	50	102	106	125	136	147	193	230	326	194	76	214
37	**Farmer**		40	65	33	35	26	34	40	-34	-14	19	64	
50	**Landscape Gardener**	37		40	35	43	32	43	51	-17	-22	43	33	
102	**Agriculture**	58	42		42	44	34	39	42	-18	-08	29	44	
106	**Botany**	21	28	32		51	50	44	39	-09	-10	22	22	
125	**Nature Study**	25	33	35	47		47	64	45	-08	-16	32	25	
136	**Zoology**	13	22	20	57	45		41	30	01	-05	21	24	
147	**Bird watching**	24	31	23	36	48	34		48	-17	-20	30	28	
193	**Raising flowers and vegetables**	33	44	40	28	30	16	24		-17	-32	51	24	
230	**Living in a city**	-24	-08	-17	00	-03	01	-06	-03		25	-01	-30	
326	Selling things house to house vs Gardening	-24	-34	-22	-19	-22	-12	-21	-26	13		-15	-11	
194	**Decorating with flowers**	15	41	23	25	27	22	29	37	02	-13		13	
76	**Rancher**	67	34	54	19	23	13	16	30	-21	-22	13		
** 214	**Forest ranger**	34	30	37	22	37	21	26	26	-19	-24	17	37	

Table 14

Office Practices Cluster

			15	21	25	65	74	80	99	105	135	36	321	208	389
	15	Bank Teller		69	32	31	39	34	30	40	32				
	21	Cashier in Bank	81		25	35	36	37	37	43	27				
	25	City or State Employee	25	26		19	27	26	18	31	30				
	65	Office Manager	39	40	22		48	44	47	40	21				
	74	Private Secretary	35	33	22	31		38	34	35	32				
	80	Retailer	32	30	13	37	19		59	32	25				
	99	Wholesaler	30	29	09	39	19	55		33	23				
	105	Bookkeeping	40	37	17	34	22	28	29		39				
	135	Typewriting	20	17	13	20	17	14	15	28					
**	36	Income Tax Accountant	43	40	17	34	24	23	55	19					
**	321	Airline pilot vs Airline ticket agent	-18	-20	-15	-13	-08	-13	-04	-15	-07	-14			
OUT	208	Making statistical charts	18	17	12	26	10	10	09	27	15	32	-04		
OUT	389	Pay attention to details	-07	-03	-11	-10	-08	-06	-02	-14	-12	-13	14	-15	

Table 15

Public Speaking Cluster

			131	199	72	26	41	160	75	68	176	367
	131	Public Speaking		66	34	29	34					
	199	Making a speech	67		39	31	29					
	72	Politician	42	43		22	51					
	26	Minister, Priest or Rabbi	25	29	21		23					
	41	Governor of a state	40	47	62	27						
**	160	Electioneering for office	38	43	65	18	50					
**	75	Radio Announcer	34	32	32	24	30	29				
**	68	Public Relations Man	38	28	39	21	34	35	39			
OUT	176	Telling jokes	26	22	19	06	14	21	24	20		
OUT	367	Prefer working alone to working on committees	-20	-18	-18	-08	-15	-17	-13	-18	-08	

Table 16

Recreational Leadership Cluster

		7	70	79	127	143	171	12	350	280	60	352	174
7	Athletic Director		55	44	44	32	41	26	25	34			
70	Playground Director	55		40	27	13	27	22	20	20			
79	Reporter, Sports Page	51	43		26	31	49	26	24	23			
127	Physical Education	62	42	40		26	27	16	26	31			
143	Boxing	32	24	25	32		33	20	20	19			
171	Sports pages in newspapers	39	29	48	38	20		20	14	31			
12	Auto Racer	13	09	14	10	24	04		20	10			
350	Playing Baseball	29	20	17	31	19	08	12		22			
**280	Athletic Men *	44	27	38	48	26	39	08	20				
** 60	Professional Baseball Player	59	38	57	47	27	43	18	33	39			
** 352	Music and art events vs Athletic events	-41	-16	-30	-31	-18	-49	-10	-07	-33	-37		
OUT 174	Skiing	16	13	07	17	11	01	23	30	20	09	03	

* Inadvertently left out of Set 1 scales.

Table 17

Religious Activities Cluster

		26	100	250	124	149	161	169	181
26	Minister, Priest or Rabbi		52	46					
100	Worker in YMCA	30		36					
250	Religious people	35	30						
** 124	Bible History	46	27	45					
** 149	Religious Music	39	30	42	46				
** 161	Going to church	47	30	57	46	43			
** 169	Church young people's group	35	45	52	46	46	59		
** 181	Reading the Bible	39	26	51	61	52	56	51	

Table 18

Sales Cluster

			11	54	77	80	81	90	95	197	326	335	68	360
	11	Auto Salesman		43	49	33	32	42	49	35				
	54	Life Insurance Salesman	43		49	33	36	41	42	41				
	77	Real Estate Salesman	54	52		39	41	50	44	44				
	80	Retailer	34	35	41		48	39	38	30				
	81	Sales Manager	43	41	48	52		47	48	54				
	90	Specialty Salesman	43	50	51	45	57		54	43				
	95	Traveling Salesman	43	44	45	38	52	56		51				
	197	Interview prospects in selling	44	45	47	36	66	59	52					
**	326	Selling things house to house	30	33	29	18	33	38	34	42				
**	335	Commission on what is done	-16	-15	-20	-07	-32	-28	-26	-35	-32			
**	68	Public Relations Man	31	35	40	35	53	41	38	49	21	-17		
OUT	360	Appraise real estate	25	21	33	17	27	21	18	28	20	-19	19	

Table 19

Science Cluster

			83	212	23	49	108	6	10	128	107	136	114	16	22	34	346	264	87	64
	83	Scientific Research Worker		67	54	50	41	43	47	37	35	35	35							
	212	Doing research work	67		42	39	36	29	41	41	34	32	27							
	23	Chemist	57	44		52	63	35	39	33	36	38	30							
	49	Laboratory Technician	54	40	54		39	37	44	31	36	31	26							
	108	Chemistry	38	30	57	37		25	25	50	38	36	30							
	6	Astronomer	40	36	41	31	26		37	29	30	31	34							
	10	Author of technical book	46	46	38	27	26	30		29	32	23	20							
	128	Physics	41	36	45	32	50	34	33		44	30	32							
	107	Calculus	33	29	34	22	40	30	30	55		19	19							
	136	Zoology	33	28	31	25	28	32	30	27	21		41							
	114	Geology	28	26	28	24	27	34	26	30	20	43								
**	16	Designer, electronic equipment	50	41	55	46	37	38	39	41	31	20	22							
**	22	Electronics Technician	49	37	58	54	32	33	32	35	25	19	21	68						
**	34	Geologist	44	37	44	39	32	47	32	34	24	40	61	36	37					
**	346	Business vs Research laboratory	-50	-47	-35	-33	-27	-26	-31	-28	-23	-20	-12	-30	-31	-21				
**	264	Outstanding scientists	31	27	30	25	26	24	32	28	17	28	24	23	19	18	-20			
OUT	87	Computer Operator	29	23	21	34	18	12	16	18	17	06	09	30	36	17	-16	14		
OUT	64	Psychologist	22	15	12	14	08	20	20	12	08	19	12	10	06	17	-00	10	08	

Table 20

Social Service Cluster

			89	100	133	184	228	229	359	256	257	64
	89	Social Worker		59	49	40	26	32				
	100	Worker in YMCA	46		34	28	30	35				
	133	Sociology	47	23		41	22	33				
	184	Social Problem Movies	49	24	47		14	20				
	228	Contributing to charities	22	20	21	24		51				
	229	Raising money for a charity	34	28	22	27	50					
**	359	Dog trainer vs Parole Officer	-29	-13	-26	-29	-15	-14				
OUT	64	Psychologist	39	18	48	36	09	10	-04			
OUT	256	Physically sick people	19	16	15	21	32	30	-10	05		

Table 21

Teaching Cluster

		82	27	63	203	202	53	59	387	359
82	School Teacher		68	48	38	36	40			
27	College Professor	63		37	44	29	38			
63	Music Teacher	34	26		18	21	39			
203	Teaching adults	48	44	23		45	18			
202	Teaching children	38	22	24	53		25			
53	Librarian	40	34	35	18	17				
** 59	High School Principal	57	46	29	32	28	31			
**387	Have patience when teaching others	23	22	13	34	26	06	18		
OUT 359	Dog trainer vs Parole Officer	-23	-23	-02	-20	-11	-04	-24	-17	

Table 22

Technical Supervision Cluster

		35	58	61	88	347
35	**Factory Manager**		49	43	46	-10
58	**Manufacturer**	54		37	33	-11
61	**Mining Superintendant**	40	38		50	10
88	**Shop Foreman**	45	35	44		09
347	Technical vs Supervisory responsibility	-22	-17	01	-02	

Table 23

Writing Cluster

		9	57	71	31	53	78	119	40	112	172	165	170	75
9	Author of Novel		67	47	51	31	36	33	38	34	31			
57	Magazine Writer	65		51	63	43	48	35	38	43	32			
71	Poet	52	50		41	41	33	31	30	32	51			
31	Editor	52	57	43		37	50	39	47	43	29			
53	Librarian	28	36	37	34		31	30	26	26	32			
78	Reporter, General	42	54	39	53	28		25	51	26	24			
119	Literature	51	42	48	43	30	40		26	54	40			
40	Foreign Correspondent	47	51	38	51	25	54	36		29	18			
112	English Composition	48	47	40	44	35	40	57	32		30			
172	Poetry	44	40	67	37	35	32	52	28	41				
** 165	Writing a one-act play	58	64	55	50	37	46	43	45	46	44			
** 170	Biographies	38	37	33	32	33	32	42	26	34	44	40		
OUT 75	Radio Announcer	23	34	22	36	15	39	22	34	19	14	33	16	

In these matrices, two correlations are presented for each pair of items. Those above the diagonal were generated from Strong's 500 Men-in-General, tested during the 1930's, and are the correlations used here to cluster the items into scales. The correlations below the diagonal are based on a recently tested sample of men-in-general who filled in the 1966 booklet. (Many of them were actually tested in 1964 and 1965, using a pre-publication version of this booklet.) This second group, which also included 500 men from a variety of occupations, provided a replication to recheck the homogeneity of the selected clusters. In general, the intercorrelations remained high in the second group, indicating that these clusters are stable over time and from one group to another.

The latter group also provided item intercorrelations for the new SVIB items added in the 1966 revision and several items, those marked with asterisks, were added to the scales after reviewing these figures. The expansion of the scales with these new items constitutes "Set 2" of the SVIB Basic Scales.

Considerations in Scale Construction

It is difficult to recapture exactly the methods used in searching out these submatrices; a combination of computer searching, art, hunches, and intuition was employed to decide which items should be grouped together, and it would be difficult to exactly replicate these techniques. To demonstrate some of these decisions, at the bottom of some matrices are items labeled "OUT." These were considered for inclusion in the scale but were rejected for one reason or another, usually because of low intercorrelations but occasionally because of content.

To guide these decisions, the following two standards were closely followed: first, each decision was based on statistical evidence so that, for example, no two items were clustered together unless it was empirically defensible; second, the other major concern was with eventual interpretation. Thus, considerable attention was paid to item content. Occasionally, an item with relatively high correlations with a cluster of items was not included with them because the item simply seemed out of character. One such example was the item "Sculptor" and the "Science" cluster. Although that item correlated fairly high with the science items such as "Scientific Research Worker" (.38), "Chemist " (.30),and "Astronomer " (.37),it was not included with them because it just didn't seem to belong.

Another example is shown in Table 7 which has the item intercorrelations for the Mathematics scale. At the bottom of the table are several items which might have been included with this scale if the size of the intercorrelations had been the only consideration. However, they were not added because they would have clearly diluted the homogeneity of the Mathematics cluster. Such decisions were not made often, nor lightly, but we definitely did not leave all of the decisions in the hands of the computer--most of them, though.

Scanning the item intercorrelation clusters makes it clear that some item content areas are better represented in the SVIB item pool than others. In the mechanical area, for example, many items were available while in the Religious Activities area, only three items were available for the Set (1) scales. Normally three items would not be considered sufficient to constitute a scale but because it was possible to generate a longer scale for the Set (2) scales, such a scale was constructed.

While we have exhausted most of the possibilities for such scales in the SVIB item pool, we make no claim to have exhausted the domain of interests. When working with item intercorrelations, it becomes very apparent that a cluster of interrelated items will emerge if enough items are available concerning any one type of activity. But if an activity is not represented in the SVIB item pool, then no scale to measure interests in that area can be constructed. This is probably not a significant problem because the SVIB item pool does have considerable diversity, especially in occupational activities. However, certain omissions can be quickly identified by scanning analogous intercorrelation matrices which have been developed for the Women's SVIB. For example, one scale available for the Women's Form but not the Men's has been labeled "Homemaking" and contains the following items:

- Caterer
- Cook
- Housekeeper
- Home Economics Teacher
- Doing your own laundry work
- Cooking
- Sewing
- Preparing dinner for guests
- Trying new cooking recipes
- Home Economics

Whether or not such a scale would be useful on the Men's Profile can only be an academic question here; because these items have never been included in the Men's booklet, this scale is not available for use in comparing male occupational groups.

In constructing these scales, some difficult decisions arose over the issue of scale inter-relationships. Most psychometricians, and probably all factor analysts, would likely argue that these scales should be as independent as possible; certainly they would prefer that there be no overlapping items. While there might be some statistical advantages in such procedures, it is not at all clear that the resulting scales would be the most accurate reflection of the structure of interests, as some interest dimensions are related, and some SVIB items tap more than one dimension.

One such quandary appeared in the three scales: Sales, Merchandising, and Office Practices. The correlations between these scales are high: .78, .63, and .79, respectively, and there is probably only one underlying dimension--Business. Yet, there were three fairly distinct clusters of items and, as they clearly merit differing interpretations, they were retained as separate scales. Whenever such an arbitrary decision had to be made, the overwhelming consideration was to improve the final interpretability of the scales, not to satisfy intermediate psychometric requirements. The eventual impact of these decisions can be seen below in Table 31 where the scale intercorrelations are reported.

"Personality"Scales

The scales which appeared first in the scale construction stage were those that researchers in interest measurement have learned to expect: Sales, Science, Mechanical, Social Service, and so forth. But we were also interested in constructing scales that would resemble the more traditional personality dimensions such as Aggressiveness or Compulsivity.

Several attempts to build such scales from the SVIB item pool were singularly fruitless. Neither our computer algorithms nor our intuition located clusters of items that held together statistically. To illustrate the difficulties, intercorrelations for items selected to represent the dimensions of "Autonomy" and "Compulsivity" are shown in Tables 24 and 25. The level of homogeneity of these "clusters" falls far short of the minimal standards of statistical coherence which were followed in forming the occupational oriented Basic Scales, and these personality clusters were dropped. These failures might be attributed either to a lower cohesiveness of personality clusters, or to the inadequacies of the SVIB item pool in the personality domain.

Finally, to gain some experience with such a personality scale, the Adventure scale was forced into existence. Items with a derring-do flavor were separated out, their intercorrelations were scanned, and those with at least mild positive correlations, generally larger than .10, were clustered together. As will be seen later, the resulting scale worked reasonably well--a group of astronauts scored highest, 2.50 standard deviations above the lowest scoring occupations of school superintendents and mathematicians--but, still, the scale seems to have less occupational relevance than the other, more homogeneous scales. For example, on the other scales, scores increase with age, especially with occupational experience, but scores on the Adventure scale decrease with age.

In general, our attempts to build homogeneous personality scales were unsuccessful.

Insert Tables 24 and 25 about here

Table 24

AUTONOMY CLUSTER

		299	335	336	351	338	367	392
299	Freedom in...doing work		-16	13	-06	-06		
[a]335	(neg) Commission on what is done vs salary	-14		-25	-04	24		
336	Work for yourself	18	-29		-01	-31		
[a]351	(neg)Amusement alone...	-12	-00	07		07		
[a]338	(neg)Work for self in small business	-10	25	-48	05			
367	Prefer working alone	06	01	-00	-22	-01		
392	Dislike taking orders	08	-06	17	-09	-14	09	

[a] = Items with negative weights

Table 25

COMPULSIVITY CLUSTER

		105	223	227	334	341	344	380	362	366	373	385	389
105	Bookkeeping		20	26	-01	-09	-02	17					
223	Methodical work	21		14	-10	-21	-02	30					
227	Saving money	22	14		-24	-03	-08	15					
[a]334	(neg) Playing safe	-10	-14	-10		03	14	-06					
[a]341	(neg)Work with many details	-09	-27	-03	06		-08	-19					
[a]344	(neg)Similarity in work	-10	-10	-08	19	00		10					
380	Plan work in detail	12	28	18	-06	-18	-01						
362	Make decisions immediately	03	-11	-07	20	09	07	-10					
366	Keep detailed records of expenses	19	21	21	-15	-11	-13	29	-11				
373	Am always on time with my work	06	14	11	-11	-01	-09	25	07	13			
385	Am slow going and sure	-01	10	08	-21	01	-08	12	-29	06	-02		
389	Pay attention to details very little	-14	-26	-12	14	29	04	-37	17	-32	-13	-10	

---

[a] = Items with negative weights

Scale Reliability

Relatively few items are available in the SVIB for any single content area; thus, most of these scales are short and one of the first concerns here was with scale stability. Building short scales, no matter how pure, could conceivably result in scales with unacceptable reliabilities. To check this, several scales of varying lengths were constructed and their long-term reliabilities were compared. Six content areas were selected and two test-retest samples were used. The first samples included 102 members of an Army Reserve unit tested twice over a 30 day interval; the second included 191 Stanford University seniors tested first in 1927 and retested in 1949. Test-retest correlations for both of these samples for several experimental scales of differing lengths are reported in Table 26. Within each content area, the scales were formed from the "best" items available; thus, the 8 item Science scale has those items with the highest intercorrelations, the 16 item scale contains the initial eight, and the next eight, and so forth.

Several conclusions can be drawn from these reliability calculations:

1. The relationship between scale length and reliability was approximately the same, whether split-half or test-retest reliability coefficients were used. As the major concern with the SVIB is long term stability, test-retest reliability is more important, and that statistic was used for the other comparisons.
2. In general, the expected relationship appeared between scale length and reliability--the longer scales were more reliable--but the relationship was by no means perfect. The shortest Mechanical scale (14 items) was more reliable over 22 years than the longest (25 items). The most reliable scale over the 22 year period was the five-item Mathematics scale.

Insert Table 26 about here

Table 26

Reliabilities for Some Experimental

Basic Scales

Content Area	Number of items	Corrected Split-half Reliability	Test-Retest Reliability 30-day	Test-Retest Reliability 22-year
Science	8	.82	.86	.66
	16	.89	.91	.72
	24	.90	.88	.66
	32	.92	.91	.73
Mechanical	14		.93	.73
	21		.94	.70
	25		.94	.70
Sales	8		.89	.47
	16		.91	.50
Writing	4		.85	.60
	7		.83	.59
	9		.84	.61
	20		.88	.67
Public Speaking	7		.87	.67
Mathematics	5		.88	.75
Median Test-retest correlation for 53 regular SVIB scales			.91	.67

3. There was considerable difference between the content areas in the reliability of scales of equal length. Thus, the 8 item Sales scale, 7 item Writing scale, 7 item Public Speaking scale, and 5 item Mathematics scale had 22 year test-retest reliabilities ranging over a considerable span: .47, .59, .67, and .75 respectively. This range could be caused either by differing degrees of homogeneity within the scales, the nature of the interest clusters involved, the composition of the test-retest samples, or all three factors.

4. In general, these reliabilities were roughly equivalent to those of the regular SVIB occupational scales. The loss due to scale shortness was apparently offset by the gain attributable to scale homogeneity. (The regular occupational scales have roughly 60-75 items.)

The general conclusion reached from this series of studies was that short scales, if their content is homogeneous, can be as reliable as long scales. Thus, the conflicting goals of purity of content, measured by item intercorrelations, and longest possible scale length were stressed in the scale construction.

Further information on the stability of these scales is reported in a later section.

Item Weights

Once the items had been selected for each scale, scoring weights were established by assigning the weight of +1 to the LIKE response, and -1 to the DISLIKE response. In the few cases where the item intercorrelations were negative, these weights were reversed.

Cranny's Work in Factor Scales

In a closely parallel but independent project, Cranny has recently factor analyzed the items of the SVIB; he described his project as follows:

> " The responses of 500 men in general to each of the 288 items were intercorrelated and the items arranged in 15 clusters on the basis of their intercorrelations. Thurstone's (1947) multiple group method of factor analysis

was followed. One factor was extracted from each cluster and the angular cosines among the 15 oblique factors obtained. Four factors were extracted from the 15 by 15 matrix of angular cosines using Lawley's (1940) maximum-likelihood procedure. The residuals were reduced to less than .00005.

"The four factors were rotated obliquely and Wherry's (1959) hierarchical factor solution was applied to yield four sub-general and 15 group factors. The factor loadings on the 19 factors of each of the 288 items were computed and a 288 by 288 residual table was obtained.

The items with loadings on each factor are listed and descriptive labels are suggested for each factor. One of the group factors was not sufficiently defined to permit interpretation " (Cranny, 1967).

There is considerable agreement between Cranny's factor scales and the scales derived in the current project, which is interesting because the scale construction techniques differed somewhat. Cranny's was essentially a statistical approach; in contrast, our methods were much more intuitive.

A comparison of the two sets of scales appears in Table 27 where the scales are matched up by name. This comparison exaggerates the similarity slightly as some scales with the same names have slightly differing item content. Still, the resemblance is considerable and reassuring.

Many of the differences were due to our greater concern for eventual interpretability. The treatment of the "Business" area is one example; Cranny has two scales: Business Management and Sales, while our set contains five, covering approximately the same item content: Business Management, Sales, Technical Supervision, Merchandising, and Office Practices. There is no simple way to determine which approach is better. Cranny's scales are probably statistically more defensible; our scales are probably easier to interpret--so the choice between them is largely a matter of taste.

Cranny's report, which is an impressive amount of work for a doctoral dissertation, contains no normative or other psychometric data on his scales.

Insert Table 27 about here

Table 27

A Listing of Cranny's vs Campbell, et al Scales

Cranny Scales	Campbell, et al Scales
1. Art	Art
2. Social Welfare and service	Social Service
3. Public Contact	Public Speaking
4. Writer	Writing
5. Military	Military
6. Farming	Agriculture
7. Natural and social science	Nature Science
8. Mechanical	Mechanical
9. Undefined	
10. Medical	Medical Service
11. Mathematics	Mathematics
12. Business Management	Business Management
13. Sales	Sales
14. Musician	Music
15. Law	Law/Politics

Scales with No Cranny Counterpart

Technical Supervision

Office Practices

Merchandising

Recreational Leadership

Adventure

Religious Activities

Teaching

Evaluation of the Basic Scales

In developing these scales, we have tried to use both statistical precision and common sense. The success of these techniques must be determined, not by studying the scale-building techniques themselves, but by the efficacy of the resulting scales. To this end, a great deal of information follows on the reliability, validity, and other characteristics of these Basic Scales. The results seem meaningful and, after studying these data, users of the SVIB should have more confidence in their interpretations and researchers should be able to home in more precisely on the unanswered questions.

One result of this work is that we now know something more about the organization of interests. The clusters of items were not forced; for the most part, they fell out of the intercorrelation matrix relatively cleanly and their makeup reflects something of the basic dimensions underlying the items. In this sense, some clusters that did not appear are noteworthy. The failure of personality clusters to appear has already been noted. Another interesting omission was anything resembling a "prestige" cluster--it might have contained items such as "Corporation President," "Governor," and, perhaps, "College Professor." This might indicate that status per se is not an important determinant of item choice.

The clusters that were formed merit more extensive study as they have some psychological integrity, so to speak. More is said about this in the section on construct validity. One observation can already be made, i.e., item clustering tends to follow vertical, not horizontal divisions in the occupational world. Thus, the Science scale includes high and low laboratory positions, the Office Practices scale includes high and low office positions. This strongly suggests that the unifying feature is the activity involved, not the more tangential aspects of the work.

Norms for the Basic Scales

Once the Basic Scales were developed, norms had to be developed for interpretation; simply calculating the number of LIKEs that an individual marks in each scale would be of little value because the areas differ in popularity. To make the scores meaningful, they must be standardized in some manner that will permit ready comparisons between individuals and between scales. One common way to do this--and the method that has been employed here--is to convert the raw scores into standard scores with a known mean and standard deviation, usually 50 and 10, respectively. To do this, it is necessary to score some reference sample on each scale, then use the resulting raw score mean and SD in a raw score-to-standard-score conversion formula.

The question as to which reference sample should be used is difficult to answer. The regular occupational scales are normed against whatever occupation they are based on but that is not possible here as these scales are not specific to any one occupation. For these Basic Scales, there are various arguments for using a more general sample such as college freshmen, or high school seniors, or college-bound high school seniors, or perhaps a random sample of young adults, or even a stratified sample of the entire male population. Each would have its peculiar advantages and disadvantages.

Description of Norm Sample

The selection of a norming sample was again a result of our concern with eventual interpretability. The men in this sample have been tested twice, once as teenagers and once as adults. They were first tested by Strong, in 1930 when they were 16 years old, in his cross-sectional study of the relationship between age and interests (Strong, 1931). They have been retested in 1966-67 in a longitudinal study of the relationship between teenage interests and adult occupations. (When retested, their mean age was 51.8, with a standard deviation of 1.50. To describe them as "16 year olds" when first tested and "52 year olds" when retested provides brief and essentially correct labels.) For this reason, they make an especially good norm group as norms can be established, using the same people, for both teenagers and adults. This advantage of being able to compare directly 16 year olds with 52 year olds, using the same sample, is offset slightly by the disadvantage that the 16 year olds were drawn from the 1930 population, not the current generation, but this is a small price to pay for having directly comparable groups.

A more precise description of the sample is not possible for Strong never wrote down his specific 1930 sampling methods. Nevertheless, it is apparent that he did try to obtain a wide and diverse sample of teenagers, and it is not grossly inaccurate to consider this a cross-section of males within the specified age ranges, with perhaps a mild under-representation of the lower end of the educational and socio-economic ladder.

Some basic demographic data are available for the total group. Their educational level is listed in Table 28. Practically all (86 percent) are high school graduates, about two-thirds have had some college, over a third have degrees. One in eight have earned graduate degrees.

Insert Table 28 about here

Insert Table 29 about here

Table 28

Educational Level of Norm Group

	N	Percent
Less than H. S. Graduate	94	14
H. S. Graduate	139	22
Some College	170	26
B.A., B.S.	149	23
M.A., M.S	50	8
M.D., D.D.S., L.L.B	26	4
Ph.D., Ed.D	19	3
TOTAL	647	100

Table 29

Job Satisfaction of Norm Group

Please check one of the following which best describes how you feel about your job:

a. 18% It is exactly what I have wanted to do.

b. 28% It is approximately what I have wanted to do.

c. 40% It is something I entered, due to circumstances more or less beyond my control, but I am now satisfied in it.

d. 2% It is a career which is tolerable but not really what I would like to do.

e. 1% It is an unsatisfactory and unrewarding career.

f. 0.3% It is a career that I strongly dislike and I wish I could leave for some other.

Ninety-three percent were married in 1966.

They had, on the average, 18 years experience in their jobs. Their feeling toward their work is reported in Table 29 which lists the percent checking various choices in answer to a question on job satisfaction.

Raw-Score-to-Standard-Score Conversion

The mean scores for this norm group on both sets of scales are listed in Table 30. For the adults, only the raw score statistics are listed; these are the figures that are used to convert an individual's raw scores into standard scores by using the following formula:

$$\left[\frac{X-M}{SD}\right] 10 + 50 = \text{Individual's Standard Score}$$

where X= Individual's Raw Score
M= Norm Group Raw Score Mean
SD= Norm Group Raw Score Standard Deviation

This conversion is a simple linear transformation and does not change the shape of the distribution. The net result is to convert all scores into a distribution where this adult norm group has a mean of 50 and standard deviation of 10. This permits an immediate comparison between the individual's score and the mean score of the norm group, and makes other comparisons possible also--such as comparing a person's score on the Law scale with his score on the Science scale.

The adult group was used here because both Set 1 and Set 2 scores were available for them; because the teenagers were tested in 1930 with the old booklet, only Set 1 scores are available for them, and the means are reported in standard score points. As can be seen, their means on almost all of the scales were slightly below the adult mean of 50. The only exceptions were the Adventure and Recreational Leadership scales.

The correlationsbetween the Set 1 and 2 scales with the same name are reported in Table 30 also, and they indicate the scales are essentially identical, with the mild exception of Religion and Music, but even their correlations (.89 and .91) are high enough so that the scales could be used interchangeably.

Insert Tables 30 and 31 about here

Table 30

Teenage and Adult Mean Scores for Basic Scale Norm Group

	Adult Scores (age 52)*				Teenage Scores (age 16)**		Correlations Between the Set 1 and Set 2 Scales
	Set 1		Set 2		Set 1		
	Mean	SD	Mean	SD	Mean	SD	
Public Speaking	-0.93	2.67	-1.41	3.94	46.6	9.2	.94
Law/Politics	-0.82	3.39	-1.41	4.08	45.4	9.6	.97
Business Management	0.43	5.03	1.03	6.01	43.9	9.5	.98
Sales	-2.58	4.15	-3.73	5.11	46.1	8.7	.96
Merchandising	-0.87	4.89	-0.58	6.54	44.1	9.6	.98
Office Practices	-1.63	3.63	-2.72	4.27	47.8	11.3	.98
Military Activities	-1.12	2.62	-1.02	3.04	50.9	9.4	.98
Technical Responsibility	0.56	2.08	0.56	2.08	44.5	11.3	1.00
Mathematics	2.39	3.35	2.39	3.35	45.4	10.2	1.00
Science	1.90	5.23	2.78	7.31	45.6	10.6	.98
Mechanical	4.54	10.97	5.40	12.07	47.5	9.1	1.00
Nature	2.67	5.06	3.08	5.44	43.3	10.3	.99
Agriculture	1.12	3.23	1.12	3.23	49.0	9.2	1.00
Adventure	-0.80	2.48	-0.23	3.53	57.2	11.1	.96
Recreational Leadership	0.80	3.66	1.92	4.86	52.9	9.7	.98
Medical Service	-0.02	3.28	-0.02	3.28	45.5	10.4	1.00
Social Service	-0.87	2.71	-0.90	3.35	47.3	8.7	.98
Religious Activities	-0.76	1.41	-1.18	3.79	46.9	9.2	.89
Teaching	-0.29	2.91	-0.17	3.65	40.8	9.0	.96
Music	-0.28	2.37	-0.63	4.68	46.6	10.1	.91
Art	-0.54	4.16	-1.28	6.63	46.0	9.3	.95
Writing	-0.66	5.09	-0.72	6.02	45.7	9.2	.98

* Raw Scores (The adult norm group has a standard score mean of 50, SD of 10 on all scales.)

** Standard Scores

Table 31

Basic Scale Intercorrelations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1 Public Speaking		.72	.46	.25	.36	.10	.12	.04	-.16	-.22	-.18	.05	.09	.04	.28	.23	.35	.45	.37	.32	.21	.46
2 Law/Politics	.78		.62	.33	.53	.24	.12	.15	-.05	-.13	-.13	.01	.08	.19	.31	.25	.22	.20	.22	.15	.11	.37
3 Business Management	.58	.54		.67	.86	.63	.31	.41	-.06	-.17	.04	.00	.17	.24	.31	.17	.26	.22	.13	-.02	-.04	.09
4 Sales	.51	.42	.69		.78	.63	.36	.29	-.10	-.15	.08	.11	.27	.22	.35	.13	.32	.32	.12	-.04	-.08	.01
5 Merchandising	.57	.49	.86	.80		.79	.27	.41	-.09	-.13	.11	.13	.21	.20	.31	.24	.28	.27	.14	.04	.03	.14
6 Office Practices	.30	.29	.56	.48	.66		.24	.38	.06	-.01	.24	.16	.16	.22	.18	.16	.29	.31	.20	.06	-.07	.06
7 Military Activities	.25	.21	.26	.17	.22	.19		.37	-.01	.14	.19	.21	.28	.36	.29	.21	.19	.20	.20	.10	-.02	-.02
8 Technical Responsibility	.03	.10	.32	.16	.25	.23	.11		.24	.43	.65	.29	.31	.22	.08	.22	.06	.11	-.02	-.02	-.02	-.15
9 Mathematics	-.05	.06	.10	-.02	-.02	.08	.08	.26		.56	.43	-.05	-.13	.00	-.08	-.02	-.20	-.11	-.03	-.11	-.16	-.27
10 Science	-.09	-.03	-.09	-.21	-.17	-.04	.04	.42	.53		.58	.39	.20	.07	-.08	.29	.01	-.03	.06	.02	.12	-.12
11 Mechanical	-.19	-.16	-.01	-.06	-.03	.09	.12	.60	.37	.64		.33	.31	.17	-.06	.14	.02	.03	.02	-.01	.13	-.20
12 Nature	-.04	-.12	-.13	-.15	-.06	-.02	.06	.18	.03	.40	.34		.76	.13	.19	.41	.26	.21	.20	.16	.34	.14
13 Agriculture	-.09	-.14	-.10	-.02	-.03	-.10	.09	.18	.01	.14	.27	.73		.29	.44	.28	.28	.20	.07	-.03	.14	-.01
14 Adventure	.21	.22	.11	.14	.09	-.19	.21	.25	.09	.20	.23	.08	.20		.45	.23	.08	.04	-.08	.02	.14	.04
15 Recreational Leadership	.23	.20	.23	.25	.28	.19	.24	.14	.04	-.05	.11	.07	.20	.34		.27	.36	.32	.15	.01	.10	.16
16 Medical Service	.19	.19	.13	.10	.13	.10	.12	.22	.19	.49	.31	.43	.22	.19	.15		.30	.21	.25	.19	.25	.13
17 Social Service	.49	.50	.35	.35	.39	.34	.16	.05	.02	.03	-.04	.12	.03	.03	.23	.25		.63	.45	.23	.24	.37
18 Religious Activities	.37	.19	.23	.22	.28	.31	.18	.15	.07	.13	.15	.27	.17	.00	.23	.17	.52		.43	.25	.08	.27
19 Teaching	.51	.45	.28	.16	.25	.25	.14	.08	.08	.28	.06	.26	.04	.08	.13	.36	.52	.39		.62	.34	.51
20 Music	.31	.21	.12	.08	.15	.15	.05	.05	.03	.30	.11	.27	.03	.05	-.05	.34	.41	.42	.53		.50	.59
21 Art	.24	.18	.01	.04	.07	.00	.02	.07	-.04	.33	.16	.41	.08	.13	-.08	.39	.36	.24	.44	.68		.57
22 Writing	.54	.47	.26	.14	.26	.18	.10	.05	.02	.24	-.05	.21	-.03	.17	.07	.28	.45	.26	.63	.55	.59	

Set 1 Correlations above diagonal calculated on sample of Stanford University Seniors, 1927 (N = 301)
Set 2 Correlations below diagonal calculated on cross-section sample of 52-year-old men (N = 647)

Scale Intercorrelations

The intercorrelations between the scales are presented in Table 31. Those above the diagonal are based on the Set 1 scales, using the scores of a sample of 1927 Stanford University graduates. The correlations below the diagonal are based on the Set 2 scales, using the scores of the adult norm sample.

Using these intercorrelations as a guide, the scales have been ordered so that the adjoining ones tend to be related.

Suggested Profile

The profile shown in Figure 2 has been prepared as an aid in interpreting these scores. The order of the scales was taken from the intercorrelation table. The heavy vertical line at 50 represents the mean score of the adult norm group; the lighter line, the teenage mean. The highest and lowest possible scores for each scale for both Set 1 and Set 2 are also marked.

Scale Reliabilities

Scores are available for several groups that have been tested and retested with the SVIB over varying lengths of time. Test-retest correlations, and means and standard deviations for both test and retest administrations are reported in Table 32. All of these comparisons use the Set 1 scales; as the Set 2 scales are usually longer, their reliabilities might be slightly higher.

The two week test-retest sample contains mostly sophomores at the University of Minnesota, all volunteers from the University's introductory psychology course.

The 30 day sample includes the officers and men from an Army Reserve Unit at Fort Snelling, Minnesota. Almost all of them had college degrees. Their occupations were widely scattered, with a mild concentration in the advertising and mass media fields.

The Harvard students, who were tested in the spring of their freshmen year and retested in the fall of their senior year, were participants in an extensive

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Insert Table 32 about here

Insert Figure 2 about here

Table 32

Basic Scale Means, Standard Deviations, and Test-Retest Correlations for Several Samples over Varying Time Periods

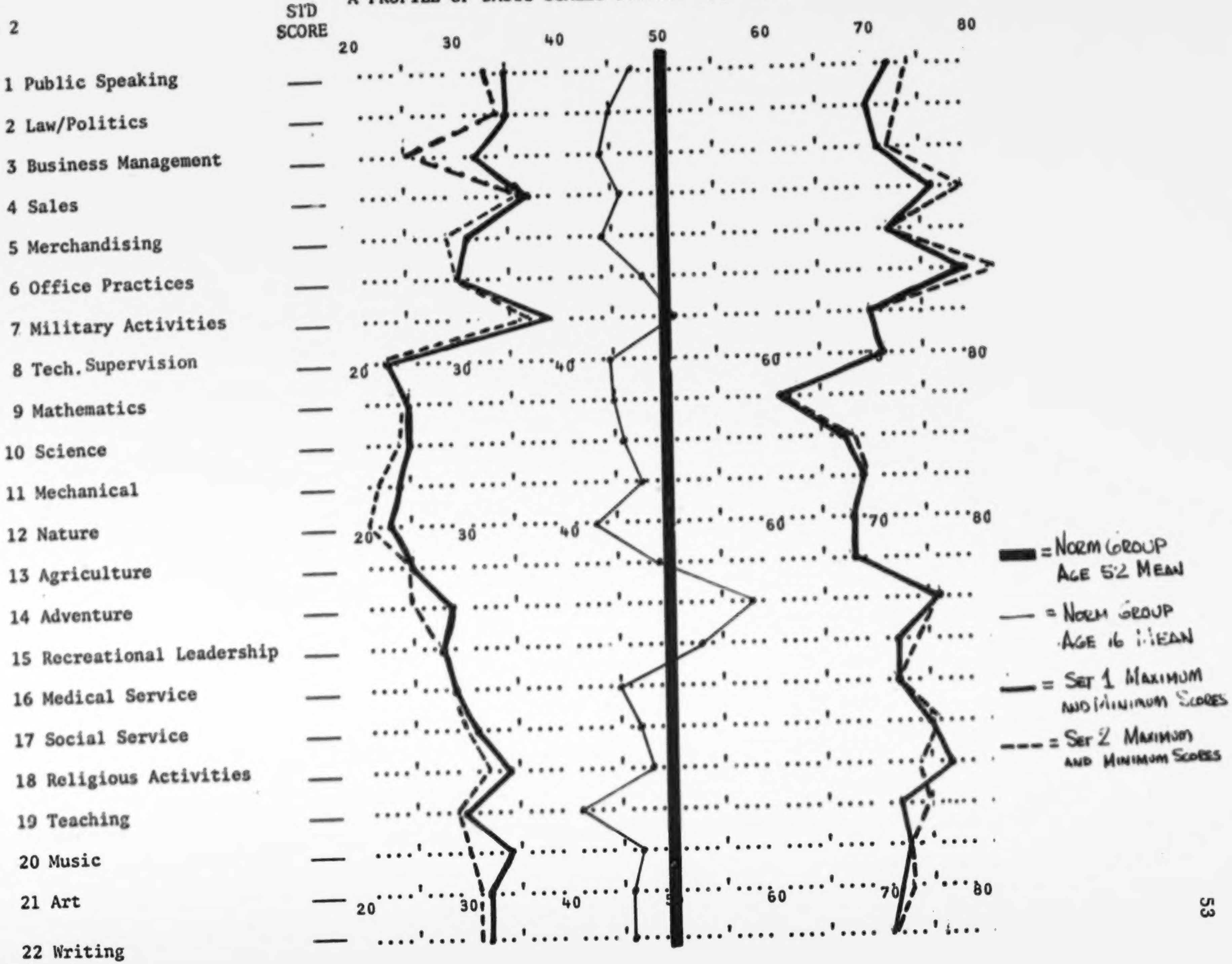
	U of M Sophomore Two Week Sample					Army Reserve Group 30 Day					Harvard Students 3 Year				
Scale	r_{tr}	Test		Retest		r_{tr}	Test		Retest		r_{tr}	Test		Retest	
Public Speaking	.89	54.6	9.9	55.3	10.0	.89	58.0	9.4	58.7	9.5	.71	57.1	10.3	57.9	10.2
Law/Politics	.88	54.6	9.3	55.7	9.7	.90	57.1	10.2	57.2	10.1	.50	58.1	10.1	60.6	9.4
Business Management	.90	50.8	10.7	51.5	10.9	.88	52.8	9.5	54.1	9.3	.72	45.6	11.3	47.2	11.7
Sales	.89	49.9	9.5	50.6	9.8	.89	50.8	10.5	52.4	11.0	.57	45.3	8.9	45.2	8.8
Merchandising	.89	52.1	10.1	52.7	10.1	.88	52.7	10.6	53.8	10.6	.66	44.7	10.2	45.2	11.3
Office Practices	.83	50.3	9.7	52.2	10.5	.87	47.5	10.6	49.2	10.7	.58	42.9	10.1	42.6	10.4
Military Activities	.91	49.1	9.7	49.0	9.6	.86	50.5	9.3	50.7	9.6	.52	45.3	8.0	45.8	7.7
Technical Supervision	.74	49.2	9.6	49.6	10.1	.71	45.1	10.0	46.0	9.7	.52	43.2	10.9	45.0	12.4
Mathematics	.94	50.1	10.0	50.6	11.1	.88	47.5	11.3	47.9	10.8	.71	53.3	9.2	52.4	10.2
Science	.94	51.0	10.0	51.5	10.4	.91	47.1	9.6	47.4	10.3	.70	53.4	10.4	52.0	11.2
Mechanical	.94	47.2	10.0	48.3	10.7	.94	42.5	10.7	42.3	11.3	.67	42.4	9.7	45.1	10.9
Nature	.90	45.7	9.0	46.9	9.3	.90	42.2	10.3	42.5	10.1	.68	42.2	10.0	44.4	10.1
Agriculture	.88	46.3	9.9	47.1	10.2	.89	40.7	9.8	41.3	10.6	.71	42.0	10.2	43.7	10.2
Adventure	.80	58.1	8.5	59.4	9.1	.81	53.9	10.6	54.4	10.5	.64	56.0	11.5	57.2	12.2
Recreational Leadership	.90	51.8	9.6	53.1	9.6	.92	49.7	10.4	50.8	9.8	.81	47.2	10.8	48.9	11.3
Medical Service	.89	55.2	9.8	56.7	9.8	.76	50.7	9.5	51.1	9.3	.67	51.6	10.5	52.4	11.1
Social Service	.83	57.0	9.8	57.6	11.3	.83	55.6	9.7	54.7	9.5	.54	51.1	10.4	53.4	10.8
Religious Activities	.83	56.3	11.3	57.4	11.1	.72	53.5	10.8	54.3	10.1	.51	50.6	11.3	49.5	11.2
Teaching	.88	55.0	9.4	55.7	9.1	.77	54.2	8.4	55.1	8.3	.63	53.9	9.7	56.6	9.8
Music	.89	52.7	10.3	54.0	10.0	.76	53.5	8.5	54.0	8.7	.60	55.6	10.0	58.1	9.0
Art	.93	52.2	10.0	53.3	10.1	.89	54.8	9.3	54.4	10.2	.56	52.9	8.6	55.6	8.7
Writing	.92	53.4	9.3	54.7	9.5	.85	57.5	8.3	57.6	8.9	.65	59.7	8.0	61.7	7.5
N's for test-retest correlations		140					102					189			
Median test-retest correlations	.89					.88					.65				
Median test-retest correlations for 53 regular SVIB scales	.91					.91					.68				

Table 32 (cont'd)

	YMCA Secretaries 22 Year					Bankers 30 Year				
	r_{tr}	Test		Retest		r_{tr}	Test		Retest	
Public Speaking	.40	59.6	7.8	62.3	6.5	.30	49.0	7.8	49.5	8.8
Law/Politics	.67	52.6	8.1	55.7	9.3	.59	51.0	7.2	49.8	9.7
Business Management	.32	58.1	7.4	58.2	8.6	.35	52.5	6.6	49.3	8.8
Sales	.63	55.1	9.5	56.3	9.2	.62	52.8	9.0	51.5	9.6
Merchandising	.40	55.3	7.5	55.4	8.2	.24	51.4	7.8	48.6	9.4
Office Practices	.50	54.1	10.4	56.3	9.5	.42	60.2	8.3	58.9	9.4
Military Activities	.66	50.6	9.7	50.1	8.7	.59	51.2	10.1	48.3	9.1
Technical Supervision	.61	47.1	11.8	49.1	11.7	.26	45.0	10.1	42.4	10.5
Mathematics	.82	49.1	10.5	49.3	10.1	.58	49.9	9.3	49.9	9.7
Science	.78	49.3	9.1	47.1	9.2	.67	44.2	8.3	42.3	10.3
Mechanical	.79	47.0	11.3	46.8	10.4	.72	45.1	11.2	42.9	11.0
Nature	.75	51.1	9.7	52.3	8.5	.61	51.5	7.9	49.7	10.6
Agriculture	.73	47.7	9.6	49.0	9.2	.39	49.2	7.8	49.0	8.6
Adventure	.53	46.2	10.2	45.1	9.7	.42	43.8	9.3	39.3	7.3
Recreational Leadership	.72	51.7	9.1	51.1	7.9	.55	46.4	8.3	42.8	9.1
Medical Service	.65	53.6	8.7	52.1	8.2	.38	45.7	8.6	44.6	9.5
Social Service	.14	70.3	5.4	71.7	3.9	.51	50.8	8.3	52.7	8.9
Religious Activities	.32	70.6	6.8	72.2	6.5	.51	49.8	9.6	52.4	10.7
Teaching	.62	55.6	8.6	58.1	8.0	.41	42.4	8.4	43.1	8.8
Music	.68	53.8	7.9	53.5	8.6	.66	49.0	10.6	46.9	9.6
Art	.12	53.9	8.1	51.8	7.9	.56	47.1	8.9	45.3	9.6
Writing	.72	57.0	7.5	57.6	7.7	.60	46.5	8.1	46.1	8.2
N's for test-retest correlations	47					48				
Median test-retest correlations	.66					.53				
Median test-retest correlations for 53 regular SVIB scales	.61					.56				

Figure 2

A PROFILE OF BASIC SCALES FOR THE SVIB--MEN



longitudinal study being conducted by Stanley King and Bruce Finnie.

The YMCA Secretaries were a group first tested by Strong in 1927-30 when they were 40 years old, and retested by Verburg in 1951 when they were 63 and, for the most part, retired (Verburg, 1952).

Further information on these retest groups, except the YMCA Secretaries, is available in the current SVIB Manual (Campbell, 1966).

The median test-retest correlation of these Basic Scales for each of these groups is given at the bottom of Table 32, and the analogous figure is reported for the regular SVIB occupational scales. As can be seen, the Basic Scales are slightly but consistently less stable over time than the occupational scales; the longer length of the latter is undoubtedly the reason. The difference between the reliabilities of the two types of scales is probably trivial; the length of the test-retest interval is still far more important in determining level of reliability than is type of scale.

Test-retest reliabilities for the Basic Scales are available from another set of men who were studied several times by E. K. Strong, Jr. He tested them originally as freshmen at Stanford in 1930, again the following year as sophomores, once more in 1939 five years after they had graduated and finally, in 1949, 15 years after they had graduated from Stanford (Strong, 1955). Table 33 has the mean profiles for the group at each testing and the test-retest correlations over the various intervals. The number tested varied from one time to another, and is reported at the bottom of the table for each comparison. From these figures, one can draw the following conclusions:

1. On most of the scales, the mean scores of this diverse group of students resembled the norm group's mean of 50. As freshmen, their most significant deviations were their low scores on the Nature and Teaching scales, 43 and 45 respectively, and their high score of 56 on the Adventure scale.

Insert Table 33 about here

Table 33

Basic Scale Means, Standard Deviations, and Test-Retest Correlations for Stanford Students Tested as Freshmen, Sophomores, Five Years After Graduation, and Fifteen Years After Graduation

	1930		'30-'31	1931		'30-'39	'31-'39	1939		'30-'49	'31-'49	'39-'49	1949	
	M	SD	r_{tr}	M	SD	r_{tr}	r_{tr}	M	SD	r_{tr}	r_{tr}	r_{tr}	M	SD
Public Speaking	52.2	9.8	.79	52.8	9.8	.51	.57	52.3	9.5	.54	.59	.66	52.1	9.7
Law/Politics	52.2	9.7	.79	53.8	10.1	.54	.56	53.6	9.1	.51	.56	.66	53.6	9.8
Business Management	49.2	10.3	.76	51.1	10.5	.54	.51	52.4	10.5	.48	.55	.78	51.9	10.2
Sales	47.9	8.7	.70	48.9	9.3	.48	.49	47.8	9.3	.46	.50	.81	48.5	9.6
Merchandising	50.3	10.2	.72	51.5	10.7	.52	.57	51.7	10.8	.51	.56	.81	51.3	10.6
Office Practices	51.2	10.7	.69	52.3	11.2	.48	.57	51.3	10.2	.46	.54	.72	49.7	10.5
Military Activities	51.9	9.9	.78	50.4	9.8	.63	.67	49.5	10.0	.56	.62	.74	49.0	9.6
Technical Supervision	47.8	11.8	.68	49.1	10.6	.51	.51	51.4	11.1	.51	.50	.69	51.4	11.8
Mathematics	51.1	9.9	.84	51.2	9.9	.75	.71	52.7	9.2	.73	.70	.87	52.1	9.5
Science	49.2	10.4	.82	49.1	10.0	.64	.72	52.4	10.0	.65	.72	.76	51.6	9.4
Mechanical	47.1	10.5	.85	46.7	10.3	.72	.77	48.6	11.2	.72	.70	.85	49.1	11.4
Nature	43.3	10.4	.81	43.4	10.6	.62	.68	47.2	10.2	.52	.53	.72	50.1	10.3
Agriculture	47.0	9.8	.77	46.9	9.8	.61	.57	47.5	9.8	.60	.60	.76	49.1	10.5
Adventure	56.1	11.2	.75	57.3	11.4	.54	.55	52.0	11.1	.59	.55	.68	50.1	10.8
Recreational Leadership	51.3	8.8	.77	51.9	9.1	.57	.68	49.9	9.5	.63	.67	.79	49.1	10.2
Medical Service	48.7	10.4	.80	48.3	9.9	.66	.66	49.8	11.1	.56	.61	.76	50.6	10.0
Social Service	49.2	9.7	.70	48.6	9.7	.34	.44	48.2	9.7	.38	.49	.77	49.0	9.9
Religious Activities	45.5	9.3	.68	44.3	9.5	.36	.37	44.7	9.7	.31	.31	.56	46.1	10.2
Teaching	44.8	9.6	.69	46.6	9.9	.45	.48	50.7	8.9	.40	.53	.62	52.7	9.2
Music	48.5	8.9	.75	49.0	9.2	.58	.51	51.3	8.1	.53	.51	.63	51.8	9.0
Art	47.9	9.3	.80	48.7	9.9	.59	.60	51.5	9.8	.56	.61	.79	51.2	10.1
Writing	51.4	9.8	.79	53.5	10.0	.67	.73	53.9	10.2	.64	.72	.81	54.9	9.6
N's for test-retest correlations			253			175	159			202	178	137		
Median test-retest correlations			.77			.56	.57			.54	.56	.76		

2. Nineteen years later, when retested, their interests had shifted mainly in these same three areas and, on the Nature and Adventure scales, they closely resembled the norm group. On the Teaching scale, however, the shift had carried them beyond the norm group to a score of 53.

3. If we assume that a 3 point shift--which is roughly one third SD--is the smallest difference worth attending to, the following shifts occurred over time within this sample:

Gains		Losses	
Teaching	8 points	Adventure	6 points
Nature	7 points	Military Activities	3 points
Music	4 points		
Writing	4 points		
Art	3 points		
Bus. Management	3 points		
Tech. Supervision	3 points		

"Middle-aging intellectual responsibility" is the apparent trend.

4. Their scores on the remaining scales over this 19 year period did not shift even this mild amount. Interests in areas such as Public Speaking, Mathematics, Science, and Religious Activities were, as measured by these scales, surprisingly constant.

5. The test-retest correlations reported at the bottom of Table 33 provide a measure of the stability of the rank-order of the individuals within the total sample. The most intriguing finding here is that the stability over the ten year adult span, 1939 to 1949, was equal to the one year freshmen-sophomore period--further support for the familiar finding that interests are remarkably stable after age 25.

Similar results for another group of college students are reported in the following section on validity.

Validity

There is increasing awareness among psychologists that there is no single way of establishing the validity of any test or inventory as no one index can adequately represent the relationship between test behavior and real world behavior. Even in those situations where the test is designed for a specific purpose, e.g., the Medical School Aptitude Test, it is not clear which aspect of medical school performance should be used as the criterion. For measures of interests, the situation is even more confusing as there are no criteria available that have even the relative clarity of medical school accomplishments. How can the validity of, say, a measure of interests in Religious Activities be studied?

The establishment of validity for such measures, we think, depends on the collection and organization of a vast amount of data covering several aspects of the inventory. All psychological tests and inventories have some potential validity--for persons do not give random answers--but until the relationships between the test behavior and an individual's actions are thoroughly studied, using many diverse approaches, the value of the test remains obscure.

With this orientation, we have tried to present here a substantial amount of information, showing that responses to these SVIB scales are related to the occupation that the individual chooses. The concept of occupational membership was used here because it has proven valuable in earlier work with the regular SVIB scales, because it is objective, because--as E. K. Strong frequently commented--hardly anyone finds fault with it, and because it is closely related to the intended purpose of the SVIB, i.e., as an aid in vocational counseling.

The information that follows has been organized in three traditional areas: content, concurrent, and predictive validity.

Content Validity

Content validity refers to the actual content of the scales. For these Basic Scales, a certain amount of content validity is assured as each item has survived both a statistical and a "common sense" screening to determine that, within each scale, the items are related. Consequently we have some confidence that when a person answers, for example, LIKE or DISLIKE to the items, Algebra, Arithmetic, Calculus, Geometry, Mathematics, and Physics, he is telling us something about his interests in mathematics.

However, although content validity is quite helpful in scale interpretation, by itself it reveals nothing about the relationship between an individual's interests and his actual behavior. For such information, we need to turn to concurrent and predictive validity.

Concurrent Validity

Concurrent validity refers to the power of the test to distinguish between specified groups at the current moment. For example, can these scales discriminate between the interests of men who are currently salesmen or scientists? This is in contrast to predictive validity where the issue is whether the scales can identify differences between boys who will become scientists or salesmen.

The relevant data for concurrent validity are presented in Tables 34 through 55. For each of the Basic Scales, the means of 113 occupational samples are rank-ordered, thus permitting at a glance an evaluation of the power of the scale to separate occupations.

These occupational samples represent the majority of adult men who have been tested for research purposes with the SVIB since it was first published in 1927. Further information on each sample is listed in Table 56.

Most of these occupational samples include men with at least three years of experience who say they like their work. More extensive information on many of the samples can be found in the SVIB Manual (Campbell, 1966).

Insert Tables 34 to 56 about here

Table 34

Brief Description of the Occupational Samples whose Basic Scale Mean Scores appear in Tables35-56

Sample	N	Year Tested	Investigator	Brief Description
Accountant	345	1932	Strong	Junior Accountants
Advertising Men	169	1931	Strong	
Air Force Officer	198	1960	Winter	Air Force Officers training at Wright Patterson Air Force Base
Animal Husbandry Prof	82	1967	CIMR[1]	University faculty members
Anthropologist	161	1967	Rossmann & Lips	University faculty
Army Officer	463	1950	Army Personnel Research Office	Above average officers, mostly field grade, all West Point graduates
Architect	240	1933	Strong	Architects, mostly from California
Artist	231	1933	Strong	
Astronaut	16	1966	CIMR	Astronauts, mostly military officers
Authors	298	1931	Strong	Roughly 60 percent journalists, 40 percent authors
Banker ('34)	238	1934	Strong	
Banker ('64)	98	1964	CIMR	
Biologist	342	1959	Lindsay	All listed in *American Men of Science*
Bus Ed Teacher	323	1956	Bacon	
Carpenter	181	1936	Strong	
CPA ('44)	611	1944	Strong	Senior Certified Public Accountants
CPA ('65)	304	1965	Rhode	Minnesota Certified Public Accountants
Cham Comm Exec	400	1960	Strong	Chamber of Commerce and Trade Association Executives

Table 34 (cont'd)

Sample	N	Year Tested	Investigator	Brief Description
Chemist	297	1931	Strong	Industrial Chemists
Comm Rec Director	350	1964	Roys	Community Recreation Directors
Computer Programmer	500	1964	Perry & Cannon	
Corp Pres ('35)	169	1935	Strong	Corporation Presidents
Corp Pres ('65)	25	1965	CIMR	Corporation Presidents
Credit Manager	452	1958	Strong	
Danforth Fellow	93	1966	Rossmann & Bentley	Danforth Foundation Fellows-aspiring college professors
Dentist	239	1932	Strong	
Economist	99	1967	Rossmann & Lips	University faculty members
Elem Teacher	115	1965	Winkle	Minnesota Elementary teachers
Engineer	513	1928	Strong	
Farmer ('36)	241	1936	Strong	Farmers, mostly from Pacific Northwest
Farmer ('67)	77	1967	Krause	South Dakota Farmers
Forest Service Men	406	1936	Strong	
Funeral Director	360	1945	Strong	
Generals and Admirals	51	1965	CIMR	3 and 4 Star Army Generals and Navy Admirals
Governor	28	1965	CIMR	Retired state governors
Guidance Counselor	275	c1950	Brown	
Interior Decorator	190	1967	CIMR	Members, American Institute of Interior Design
Judge	42	1967	CIMR	Federal District Judges

Table 34 (con'td)

Sample	N	Year Tested	Investigator	Brief Description
Lawyer ('27)	251	1927	Strong	California Lawyers
Lawyer ('49)	78	1949	Berdie & Hagenah	Minnesota Lawyers
Legislator	81	1967	Willow	Senators and Representatives from Minnesota Legislature
Librarian	425	1959	Winters	
Mathematician	181	1929	Strong	
Math-Science Teacher	289	1936	Strong	High School Mathematics-Science Teachers
McKnight Fellow	32	1966	CIMR	McKnight Fellows--actors in Tyrone Guthrie Theater in Minneapolis
Minister ('27)	250	1927	Strong	
Minister ('65)	96	1965	CIMR	
Mpls Symphony	53	1966	CIMR	Members. Minneapolis Symphony Orchestra
Musician	450	1952	Strong	Mainly performing musicians
Music Teacher	493	1952	Strong	
NIAL Member	42	1966	CIMR	Members. National Institute of Arts and Letters
Navy Officer	645	1965	Stephenson & Abrahams	Above average naval officers
Newsmen	283	1967	CIMR	Newspaper reporters and television news broadcasters
Office Worker	326	1928	Strong	
Optometrist	405	1963	Acree	Members. American Optometric Association
Osteopath	585	1939	Strong	
Personnel Director	147	1927	Strong	
Petroleum Engineer	385	1965	Alford	Texas Petroleum engineers

Table 34 (con't)

Sample	N	Year Tested	Investigator	Brief Description
Pharmacist	309	1947	Schwebel	New York pharmacists
Photographer	253	1967	CIMR	Mostly news photographers and photojournalists
Physical Therapist	350	1957	Strong	
Physician ('27)	175	1927	Strong	
Physician ('49)	534	1949	Strong & Tucker	Random sample of the American Medical Association
Internist	209	1949	" "	Representative sample of those boarded in designated specialty
Neurological Surgeon	47	"	" "	
Orthopedic Surgeon	71	"	" "	" " " "
Pathologist	154	"	" "	" " " "
Pediatrician	96	"	" "	" " " "
Physiatrist	460	1966	Athelstan	" " " "
Psychiatrist	404	1949	Strong & Tucker	" " " "
Radiologist	111	"	" "	" " " "
Surgeon	188	"	" "	" " " "
Urologist	84	"	" "	" " " "
Physicist ('27)	192	1929	Strong	
Physicist ('67)	64	1967	CIMR	
Pilot	510	1941	Strong	Strong's original Aviator group
Policemen	254	1933	Strong	Police officers from several cities
Political Scientist	177	1967	Rossmann & Lips	University faculty members

Table 34 (cont'd)

Sample	N	Year Tested	Investigator	Brief Description
Priest	234	1966	Lepak	Minnesota priests
Printer	270	1936	Strong	
Production Manager	216	1935	Strong	
Psychologist ('31)	174	1931	Strong	
Psychologist ('47)	149	1947	Kelly	Veterans Administration clinical psychologists
Psychologist ('49)	1045	1949	Kriedt	Ninety percent of APA membership
Psychologist (Exp)	256	1949	Kriedt	Experimental psychologists, subset of the total 1949 group
Public Admin	550	1941	Strong	Public Administrators from a variety of public agencies
Pulitzer Prize	84	1965	CIMR	Pulitzer Prize winners, mostly journalists and novelists
Purch Agent	219	1931	Strong	Purchasing agents
Rehab Counselor	272	1949	Acree	Vocational Rehabilitation counselors from the Veterans Administration
Salesmen, Auto	116	1929	Strong	Automobile Salesmen
Salesmen, Computer	190	1964	Stein	Control Data Corporation computer salesmen
Salesmen, Encyclopedia	49	1966	CIMR	Outstanding World Book encyclopedia salesmen
Salesmen, Life ('31)	310	1931	Strong	
Salesmen, Life ('66)	76	1966	CIMR	$2,000,000 Life Insurance Salesmen
Salesmen, 3M	100	c1960	Kirchner	Salesmen on staff of 3M
Salesmen, 3M applicants	100	c1960	Kirchner	Men applying for sales positions at 3M company
Salesmen, PG&E	179	1939	Strong	Appliance salesmen, Pacific Gas & Electric company
Salesmen, Real Estate	243	1932	Strong	

Table 34 (cont'd)

Sample	N	Year Tested	Investigator	Brief Description
Salesmen, Steel	61	1966	Berdie	Structural steel salesmen
Sales Manager	228	1932	Strong	
School Super ('30)	190	1930	Strong	School Superintendents
School Super ('65)	153	1965	CIMR	School Superintendents
Soc Sci Teacher	217	1936	Strong	High School Social Science Teachers
Social Worker ('53)	400	1953	McCornack	
Social Worker ('67)	54	1967	CIMR	
Sociologist	198	1965	Rossmann & Lips	University faculty members
Student Personnel	192	1961	Clark	Members, American College Personnel Association
Unitarian Minister	113	1950	Strong	
Vet ('49)	310	1949	Hannum	Iowa veterinarians
Vet ('66)	478	1966	Hannum & Alsip	Iowa veterinarians
YMCA PD	216	1927	Strong	YMCA Physical Director
YMCA Sec	113	1927	Strong	
YMCA Staff	184	1961	Seashore	YMCA Staff (comparable to combination of original Physical Directors and Secretaries)

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[1] CIMR = Center for Interest Measurement Research, University of Minnesota

Table 35
Male Occupations Mean Scores on the ADVENTURE Scale

Mean Standard Score	
70	
69	
68	
67	
66	Astronaut
65	
64	
63	
62	
61	
60	Salesmen, 3M applicants
59	Salesmen, 3M/ Policemen/ Salesmen, Computer
58	Air Force Officer/ Navy Officer
57	Salesmen, Steel/ Pilot
56	McKnight Fellow/ YMCA Staff/ Petroleum Engineer
55	Photographer/ Elem Teacher/ Comm Rec Director/ Computer Programmer
54	CPA 65/ Army Officer/ Legislator/ Newsmen/ Salesmen, Life 66/ Social Worker 67
53	Cham Comm Exec/ Salesmen, Auto/ Forest Service Men/ Physical Therapist
52	Vet 66/ YMCA PD/ Optometrist/ Minister 65/ Orthopedic Surgeon
51	Salesmen, Encyclopedia/ Generals and Admirals/ Danforth Fellow/ CPA 44/ Corp Pres 65/ Neurological Surgeon
50	Priest/ Sociologist/ Credit Manager/ Salesmen, PG&E/ Printer/ Carpenter/ School Super 65
49	Radiologist/ Urologist/ Farmer 36/ Surgeon/ Mpls Symphony/ Osteopath/ Math-Science Teacher/Student Personnel
48	Psychologist 47/ Salesmen, Real Estate/ Public Admin/ Pediatrician/ Chemist/ Biologist/ Banker 64/ Physiatrist Bus Ed Teacher/ Farmer 67/ Musician/ Physicist 67/ Anthropologist
47	Accountant/ Social Worker 53/ Psychologist 31/ Office Worker/ Unitarian Minister/ Economist/ Production Manager Psychologist (Exp)/ Personnel Director/ Funeral Director/ Physician 49/ Psychiatrist/ Animal Husbandry Prof/ Artist/ Vet 49
46	Pharmacist/ Soc Sci Teacher/ Physician 27/ Engineer/ Purch Agent/ Political Scientist/ Sales Manager/ Librarian/ Dentist Lawyer 49/ Lawyer 27/ Pathologist/ Authors/ Interior Decorator/ Governor/ Advertising Men
45	Rehab Counselor/ Architect/ YMCA Sec/ Salesmen, Life 31/ Guidance Counselor/ Pulitzer Prize/ Minister 27/ Psychologist 49 Music Teacher/ Internist
44	Judge
43	Banker 34/ Corp Pres 35/ Physicist 27
42	
41	School Super 30
40	Mathematician/ NIAL Member
39	
38	
37	
36	
35	

Table 36

Male Occupations Mean Scores on the AGRICULTURE Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	
63	Farmer 67
62	
61	Farmer 36/ Vet 49
60	Vet 66
59	Forest Service Men/ Animal Husbandry Prof
58	
57	
56	
55	
54	Pilot
53	Army Officer/ Generals and Admirals
52	Orthopedic Surgeon
51	Salesmen, Encyclopedia/ Policemen/ Comm Rec Director/ Physical Therapist/ Astronaut/ Governor
50	YMCA PD/ Salesmen, PG&E/ Biologist/ Urologist/ Legislator/ Osteopath
49	Public Admin/ Radiologist/ Carpenter/ Surgeon/ Salesmen, Life 66/ Petroleum Engineer/ Neurological Surgeon
48	Salesmen, Real Estate/ YMCA Sec/ Salesmen, Steel/ Salesmen, Life 31/ YMCA Staff/ Dentist/ Banker 34/ Minister 27 Salesmen, Computer/ Funeral Director/ Air Force Officer/ Navy Officer/ Physiatrist
47	Salesmen, 3M applicants/ Salesmen, 3M/ Soc Sci Teacher/ Pediatrician/ Physician 27/ Credit Manager/ Photographer Elem Teacher/ Sales Manager/ CPA 44/ Banker 64/ Corp Pres 65/ Physician 49/ Artist
46	Chemist/ Engineer/ School Super 30/ Unitarian Minister/ Production Manager/ Personnel Director/ Salesmen, Auto/ Corp Pres 35 Bus Ed Teacher/ Pathologist/ Math-Science Teacher
45	Rehab Counselor/ Priest/ Cham Comm Exec/ Architect/ Social Worker 53/ Office Worker/ Printer/ Guidance Counselor McKnight Fellow/ Optometrist/ Computer Programmer/ Lawyer 49/ School Super 65/ Psychiatrist/ Social Worker 67/ Music Teacher Musician/ Internist/ Anthropologist
44	Pharmacist/ Accountant/ Psychologist (Exp)/ Purch Agent/ Lawyer 27/ Newsmen/ Minister 65/ Advertising Men/ Physicist 27 Psychologist 49/ Authors
43	Psychologist 31/ Mpls Symphony/ Danforth Fellow/ Physicist 67/Interior Decorator/ NIAL Member/ Student Personnel
42	Psychologist 47/ Sociologist/ CPA 65/ Librarian/ Pulitzer Prize/ Judge/ Mathematician
41	Economist
40	Political Scientist
39	
38	
37	
36	
35	

Table 37
Male Occupations Mean Scores on the ART Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	Interior Decorator
64	Architect/ McKnight Fellow
63	Artist
62	
61	
60	Photographer
59	Mpls Symphony/ NIAL Member
58	Pulitzer Prize
57	Unitarian Minister/ Librarian/ Danforth Fellow/ Musician
56	Advertising Men/ Physiatrist/ Music Teacher/ Anthropologist/ Neurological Surgeon
55	Psychologist 47/ Psychologist 31/ Elem Teacher/ Minister 27/ Minister 65/ Orthopedic Surgeon/ Authors
54	Priest/ Sociologist/ Social Worker 53/ Pediatrician/ Biologist/ Economist/ Psychologist (Exp)/ Dentist/ Newsmen/ Psychiatrist
53	Salesmen, 3M/ YMCA Sec/ Urologist/ Personnel Director/ Political Scientist/ Judge/ Physical Therapist/ Psychologist 49 Social Worker 67/ Physicist 67/ Pathologist
52	Salesmen, 3M applicants/ YMCA PD/ Radiologist/ Physician 27/ Salesmen, PG&E/ Carpenter/ Surgeon/ Salesmen, Encyclopedia Comm Rec Director/ YMCA Staff/ Computer Programmer/ Generals and Admirals/ Physicist 27/Physician 49/ Internist Student Personnel
51	Rehab Counselor/ Cham Comm Exec/ Public Admin/ Office Worker/ Engineer/ Printer/ Corp Pres 35/ Optometrist/ Bus Ed Teacher Osteopath/ Astronaut/ Mathematician
50	Accountant/ Soc Sci Teacher/ Chemist/ Credit Manager/ Salesmen, Life 31/ School Super 30/ Guidance Counselor/ Funeral Direc Policemen/ Army Officer/ Legislator/ School Super 65/ Salesmen, Life 66/ Math-Science Teacher
49	Salesmen, Real Estate/ Salesmen, Steel/ Air Force Officer/ Production Managers/ Salesmen, Auto/ Forest Service Men/ Pilot Sales Manager/ Salesmen, Computer/ APA 44/ Navy Officer/ Lawyer 27/ Governor
48	Pharmacist/ Farmer 36/ Purch Agent/ Lawyer 49/ Animal Husbandry Prof/ Petroleum Engineer
47	Vet 66/ CPA 65/ Banker 34/ Banker 64/ Corp Pres 65
46	Vet 49
45	Farmer 67
44	
43	
42	
41	
40	
39	
38	
37	
36	
35	

Table 38

Male Occupations Mean Scores on the BUSINESS MANAGEMENT Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	
63	
62	Salesmen, 3M applicant
61	Salesmen, 3M/ Credit Manager
60	Cham Comm Exec/ Sales, Encyclopedia/ Bus Ed Teacher
59	YMCA Sec/ Personnel Director/ Salesmen, Computer
58	Salesmen, Steel/ Comm Rec Director
57	Rehab Counselor/ Accountant/ Office Worker/ Salesmen, PG&E/ Sales Manager/ YMCA Staff/ School Super 65
56	Guidance Counselor/ Purch Agent/ Legislator
55	Public Admin/ Corp Pres 35/ Funeral Director/ CPA 65/ Production Manager/ Army Officer/ CPA 44
54	Soc Sci Teacher/ Social Worker 53/ Salesmen, Life 31/ Air Force Officer/ Salesmen, Auto/ Navv Officer/ Banker 64/ Governor
53	Salesmen, Real Estate/ School Super 30/ Banker 34/ Generals and Admirals/ Corp Pres 65/ Salesmen, Life 66
52	YMCA PD/ Petroleum Engineer/ Student Personnel
51	Pharmacist/ Elem Teacher/ Forest Service Men/ Social Worker 67/ Music Teacher
50	Policemen/ Optometrist/ Lawyer 49/ Minister 65/ Math-Science Teacher/ Advertising Men
49	Psychologist 47/ Priest/ Librarian/ Computer Programmer/ Minister 27/ Physical Therapist
48	Vet 66/ Engineer/ Printer/ Unitarian Minister/ Carpenter/ Farmer 36/ Pilot/ Interior Decorator
47	Economist/ Physiatrist/ Psychologist 49/ Orthopedic Surgeon/ Vet 49
46	Pediatrician/ Chemist/ Urologist/ Lawyer 27/ Newsmen/ Psychiatrist/ Farmer 67/ Osteopath/ Astronaut
45	Sociologist/ Radiologist/ Judge/ Animal Husbandry Prof/ Musician
44	Psychologist 31/ Surgeon/ Political Scientist/ Dentist/ Neurological Surgeon
43	Architect/ Psychologist (Exp)/ Physician 49/ Internist
42	Biologist/ Danforth Fellow
41	Physician 27/ Photographer/ Mpls Symphony/ Pathologist
40	McKnight Fellow/ Physicist 27/ Physicist 67/ Mathematician/ Authors
39	Anthropologist
38	Pulitzer Prize
37	
36	Artist/ NIAL Member
35	

Table 39
Male Occupations Mean Scores on the LAW/POLITICS Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	
63	
62	Judge/ Legislator
61	Salesmen, 3M applicants/ Salesmen, 3M/ Political Scientist/ Salesmen, Computer/ Governor
60	Cham Comm Exec
59	Lawyer 49
58	Social Worker 53/ Credit Manager/ CPA 65/ Economist/ Navy Officer/ Lawyer 27/ Newsmen/ Salesmen, Life 66/ Student Personnel
57	Rehab Counselor/ Unitarian Minister/ Air Force Officer/ Salesmen, Encyclopedia/ Comm Rec Director/ Army Officer School Super 65/ Social Worker 67
56	Priest/ Sociologist/ Salesmen, Steel/ Guidance Counselor/ Personnel Director/ YMCA Staff/ Generals and Admirals Bus Ed Teacher/ Danforth Fellow
55	Public Admin/ Social Sci Teacher/ School Super 30/ Elem Teacher/ Minister 65/ Astronauts
54	Psychologist 47/ Policemen/ Optometrist/ Computer Programmer/ Corp Pres 65/ Petroleum Engineer
53	YMCA Sec/ Salesmen, PG&E/ McKnight Fellow/ CPA 44/ Physiatrist/ Physical Therapist/ Psychiatrist/ Psychologist 49
52	Accountant/ Pediatrician/ Office Worker/ Salesmen, Life 31/ Salesmen, Auto/ Librarian/ Banker 34/ Minister 27 Orthopedic Surgeon/ Anthropologist/ Neurological Surgeon
51	Vet 66/ Salesmen, Real Estate/ Psychologist 31/ Radiologist/ Urologist/ Psychologist (Exp)/ Pulitzer Prize/ Banker 64
50	Printer/ Production Manager/ Purch Agent/ Pilot/ Sales Manager
49	Pharmacist/ YMCA PD/ Corp Pres 35/ Biologist/ Photographer/ Surgeon/ Forest Service Men/ Animal Husbandry Professor Music Teacher/ Osteopath/ Internist/ Math-Science Teacher
48	Funeral Director/ Mpls Symphony/ Advertising Men/ Physician 49/ Musician/ Physicist 67/ Authors
47	Engineer/ Farmer 36/ Dentist/ Pathologist/ Vet 49
46	Physician 27/ Chemist/ Carpenter/ Mathematician/ Interior Decorator/ NIAL Member
45	Architect/ Farmer 67
44	Physicist 27
43	
42	Artist
41	
40	
39	
38	
37	
36	
35	

Table 40

Male Occupations Mean Scores on the MATHEMATICS Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	
63	
62	
61	Astronauts
60	Physicist 27/ Physicist 67/ Mathematician
59	
58	Air Force Officer/ Computer Programmer/ Salesmen, Computer/ Petroleum Engineer
57	Engineer/ Army Officer
56	Chemist/ CPA 65/ Economist/ Generals and Admirals/ Corp Pres 65
55	Psychologist (Exp)/ Optometrist/ CPA 44/ Navy Officer/ Animal Husbandry Prof
54	Psychologist 31/ Danforth Fellow/ Physiatrist/ Math-Science Teacher
53	Accountant/ Pediatrician/ School Super 30/ Biologist/ Urologist/ Production Manager/ Elem Teacher/ Pilot/ School Super 65 Psychologist 49/ Pathologist/ Orthopedic Surgeon/ Neurological Surgeon
52	Architect/ Radiologist/ Credit Manager/ Salesmen, Steel, Corp Pres 35/ Forest Service Men/ Banker 64/ Psychiatrist
51	Salesmen, 3M/ Public Admin/ Office Workers/ Personnel Director/ Surgeon/ Sales Manager/ Lawyer 49/ Physician 49/ Internist
50	Psychologist 47/ Vet 66/ Pharmacist/ Sociologist/ Salesmen, PG&E/ Guidance Counselor/ Carpenter/ Farmer 36/ Purch Agent Judge/ Legislator/ Physical Therapist/ Bus Ed Teacher/ Student Personnel
49	Rehab Counselor/ Physician 27/ Salesmen, Auto/ Banker 34/ Lawyer 27/ NIAL Member/ Governor
48	Salesmen, 3M applicant/ YMCA PD/ Policemen/ Political Scientist/ Mpls Symphony/ Comm Rec Director/ Dentist/ Minister 27 Osteopath/ Anthropologist/ Vet 49
47	Cham Comm Exec/ YMCA Sec/ Salesmen, Life 31/ Printer/ Unitarian Minister/ Funeral Director/ Salesmen, Encyclopedia
46	Priest/ Salesmen, Real Estate/ Photographer/ McKnight Fellow/ Librarian/ YMCA Staff/ Minister 65/ Salesmen, Life 66 Music Teacher/ Musician
45	Soc Sci Teacher/ Social Worker 53/ Social Worker 67/ Farmer 67/ Advertising Men
44	
43	Newsmen
42	Pulitzer Prize/ Artist/ Interior Decorator
41	
40	Authors
39	
38	
37	
36	
35	

Table 41
Male Occupations Mean Scores on the MECHANICAL Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	
63	
62	
61	
60	
59	
58	
57	
56	Air Force Officer/ Carpenter/ Orthopedic Surgeon
55	
54	Radiologist/ Pilot/ Army Officer/ Farmer 67/ Neurological Surgeon
53	Engineer/ Urologist/ Physicist 27/ Petroleum Engineer
52	Psychologist (Exp)/ Computer Programmer/ Physical Therapist/ Astronaut/ Math-Science Teacher
51	Chemist/ Printer/ Production Manager/ Surgeon/ Forest Service Men/ Policemen/ Navy Officer/ Physiatrist/ Physicist 67
50	Pediatrician/ Salesmen, PG&E/ Farmer 36/ Optometrist/ Salesmen, Computer/ Generals and Admirals/ Pathologist
49	Biologist/ Dentist/ CPA 44/ Psychiatrist/ Osteopath
48	Architect/ YMCA PD/ Psychologist 31/ Credit Manager/ Personnel Director/ Elem Teacher/ Physician 49/ Psychologist 49
47	Vet 66/ Public Admin/ Accountant/ Salesmen, Auto/ Purch Agent/ Comm Rec Director/ Minister 27/ Banker 64/ Corp Pres 65 Animal Husbandry Prof/ Bus Ed Teacher/ Internist/ Mathematician/ Vet 49
46	Salesmen, 3M applicants/ Salesmen, 3M/ YMCA Sec/ Physician 27/ Salesmen, Steel/ Office Worker/ Unitarian Minister Guidance Counselor/ Corp Pres 35/ Mpls Symphony/ YMCA Staff/ Musician/
45	Psychologist 47/ Rehab Counselor/ Pharmacist/ Social Worker 53/ CPA 65/ Photographer/ Social Worker 67
44	Priest/ Cham Comm Exec/ Soc Sci Teacher/ School Super 30/ Funeral Director/ Sales Manager/ Legislator/ Banker 34/ Minister 65 School Super 65/ Music Teacher/ Artist
43	Salesmen, Real Estate/ Sociologist/ Economist/ Librarian/ Anthropologist/ Student Personnel
42	Danforth Fellow
41	Salesmen, Encyclopedia/ McKnight Fellow/ Lawyer 49/ Advertising Men/ Governor
40	Salesmen, Life 31/ Lawyer 27/ Interior Decorator
39	Judge/ Newsmen
38	Political Scientist/ Pulitzer Prize/ Salesmen, Life 66/ Authors/ NIAL Member
37	
36	
35	

Table 42
Male Occupations Mean Scores on the MEDICAL SERVICE Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	Dentist/ Physical Therapist
63	Vet 66/ Urologist/ Physiatrist/ Osteopath/ Vet 49
62	Pharmacist/ Radiologist/ Pediatrician/ Surgeon/ Physician 49/ Neurological Surgeon
61	Physician 27
60	Optometrist/ Psychiatrist/ Pathologist/ Internist/ Orthopedic Surgeon
59	YMCA PD/ Animal Husbandry Prof
58	Biologist
57	Psychologist 47/ Math-Science Teacher
56	Psychologist (Exp)/ Comm Rec Director/ YMCA Staff
55	Psychologist 31/ Psychologist 49
54	Salesmen, 3M applicants/ Rehab Counselor/ Priest/ Social Worker 53/ Chemist/ Elem Teacher/ Policemen/ Minister 27 Social Worker 67/ Astronaut
53	YMCA Sec/ Unitarian Minister/ Guidance Counselor/ Funeral Director/ Salesmen, Computer/ School Super 65/ Student Personnel
52	Salesmen, 3M/ Soc Sci Teacher/ Credit Manager/ Air Force Officer/ Mpls Symphony/ Army Officer/ Computer Programmer Legislator/ Danforth Fellow/ Minister 65/ Salesmen, Life 66/ Petroleum Engineer
51	Cham Comm Exec/ Public Admin/ Salesmen, PG&E/ Forest Service Men/ Pilot/ Navy Officer/ Musician/ Governor
50	Sociologist/ Salesmen, Steel, Office Worker/ School Super 30/ Personnel Director/ Farmer 36/ Salesmen, Auto/ Librarian CPA 44/ Music Teacher/ Bus Ed Teacher/ Anthropologist
49	Salesmen, Life 31/ Printer/ CPA 65/ Production Manager/ Photographer/ McKnight Fellow/ Generals and Admirals/ Physicist 67
48	Accountant/ Economist/ Carpenter/ Salesmen, Encyclopedia/ Sales Manager/ Pulitzer Prize/ Judge/ Lawyer 49/ Newsmen Banker 64/ Physicist 27/ NIAL Member
47	Salesmen, Real Estate/ Engineer/ Corp Pres 35/ Purch Agent/ Banker 34/ Lawyer 27/ Corp Pres 65/ Artist
46	Architect/ Political Scientist/ Advertising Men/ Mathematician/ Author/ Interior Decorator
45	Farmer 67
44	
43	
42	
41	
40	
39	
38	
37	
36	
35	

Table 43

Male Occupations Mean Scores on the MERCHANDISING Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	
63	
62	Salesmen, 3M
61	Salesmen, 3M applicants/ Bus Ed Teacher
60	
59	Credit Manager
58	Cham Comm Exec/ Salesmen, PG&E/ Salesmen, Encyclopedia
57	Salesmen, Steel/ Office Worker/ Salesmen, Computer
56	Pharmacist/ YMCA Sec / Funeral Director/ Salesmen, Auto/ Purch Agent
55	Comm Rec Director
54	Rehab Counselor/ Accountant/ Soc Sci Teacher/ Guidance Counselor/ CPA 65/ Sales Manager/ YMCA Staff/ Interior Decorator
53	Salesmen, Real Estate/ Air Force Officer/ Legislator/ School Super 65
52	Salesmen, Life 31/ Personnel Director/ Elem Teacher/ Army Officer/ CPA 44/ Navy Officer/ Banker 64/ Salesmen, Life 66
51	YMCA PD/ Corp Pres 35/ Optometrist/ Banker 34/ Petroleum Engineer/ Math-Science Teacher
50	Vet 66/ Public Admin/ Social Worker 53/ Advertising Men
49	Production Manager/ Librarian/ Computer Programmer/ Generals and Admirals/ Physical Therapist/ Music Teacher
48	Priest/ School Super 30/ Printer/ Urologist/ Policemen/ Lawyer 49/ Minister 65/ Corp Pres 65/ Physiatrist/ Student Personnel Governor
47	Radiologist/ Carpenter/ Farmer 36/ Pilot/ Minister 27/ Animal Husbandry Prof/ Social Worker 67/ Farmer 67/ Osteopath Orthopedic Surgeon/ Astronaut/ Vet 49
46	Psychologist 47/ Pediatrician/ Unitarian Minister/ Forest Service Men/ Musician
45	Sociologist/ Chemist/ Economist/ Dentist/ Psychiatrist/ Psychologist 49/ Neurological Surgeon
44	Judge/ Psychologist 31/ Engineer/ Surgeon/ Mpls Symphony/ Lawyer 27/ Newsmen/ Physician 49/ Internist
43	Architect/ Biologist
42	Physician 27/ Psychologist (Exp)/ McKnight Fellow/ Political Scientist
41	Photographer/ Pathologist/ Mathematician
40	Danforth Fellow/ Physicist 67
39	Physicist 67/ Authors/ Anthropologist
38	Pulitzer Prize/ Artist
37	
36	NIAL Member
35	

Table 44

Male Occupations Mean Scores on the MILITARY Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	Army Officer/ Generals and Admirals
63	
62	
61	Policemen
60	Air Force Officer
59	
58	YMCA PD/ Pilot
57	
56	Navy Officer/ Astronaut/ Governor
55	Comm Rec Director
54	Salesmen, 3M applicants/ Rehab Counselor/ Public Admin/ Credit Manager/ Office Worker/ Salesmen, PG&E/ YMCA Staff Legislator/ Salesmen, Computer/ Physical Therapist
53	Salesmen, 3M/ Vet 66/ Cham Comm Exec/ Engineer/ Personnel Director/ Salesmen, Auto/ Optometrist/ CPA 44/ Farmer 67 Osteopath/ Vet 49
52	Accountant/ Soc Sci Teacher/ Salesmen, Steel/ Production Manager/ Farmer 36/ Purch Agent/ Funeral Director/ Lawyer 27 School Super 65/ Banker 64/ Bus Ed Teacher/ Petroleum Engineer/ Math- Science Teacher
51	Salesmen, Real Estate/ Pharmacist/ Salesmen, Life 31/ Guidance Counselor/ Carpenter/ Salesmen, Encyclopedia/ Elem Teacher Forest Service Men/ Sales Manager/ Dentist/ Animal Husbandry Prof/ Orthopedic Surgeon/ Advertising Men
50	Architect/ YMCA Sec/ Physician 27/ School Super 30/ Printer/ CPA 65/ Urologist/ Banker 34/ Lawyer 49/ Physician 49 Physiatrist/ Salesmen, Life 66/ Music Teacher/ Student Personnel
49	Judge/ Priest/ Social Worker 53/ Chemist/ Surgeon/ Computer Programmer/ Corp Pres 35/ Newsmen/ Psychiatrist Social Worker 67/ Neurological Surgeon
48	Psychologist 31/ Radiologist/ Biologist/ Psychologist (Exp)/ Minister 27/ Pathologist/ Authors
47	Psychologist 47/ Librarian/ Minister 65/ Physicist 27/ Psychologist 49/ Musician/ Internist/ Interior Decorator
46	Pediatrician/ Unitarian Minister/ Economist/ Photographer/ Political Scientist/ Pulitzer Prize/ Artist/ Mathematician
45	Sociologist/ Corp Pres 65/ Physicist 67/ Anthropologist
44	Mpls Symphony/ Danforth Fellow/ NIAL Member
43	
42	McKnight Fellow
41	
40	
39	
38	
37	
36	
35	

Table 45

Male Occupations Mean Scores on the MUSIC Scale

Mean Standard Score	
70	
69	
68	
67	Music Teacher
66	
65	
64	McKnight Fellow/ Musician
63	
62	
61	Danforth Fellow
60	NIAL Member
59	
58	Librarian/ Minister 65
57	Unitarian Minister/ Minister 27/ Physiatrist
56	Psychologist 47/ Pediatrician/ Economist/ Photographer/ Political Scientist/ Pulitzer Prize
55	Priest/ Sociologist/ Social Worker 53/ Elem Teacher/ Newsmen/ Psychiatrist/ Interior Decorator/ Anthropologist
54	YMCA Sec/ Psychologist 31/ Biologist/ Social Worker 67/ Artist/ Pathologist/ Internist
53	Radiologist/ Psychologist (Exp)/ Computer Programmer/ Physical Therapist/ Psychologist 49/ Physicist 67/ Orthopedic Surgeon Neurological Surgeon/ Student Personnel
52	Salesmen, 3M applicants/ Cham Comm Exec/ Architect/ Soc Sci Teacher/ YMCA PD/ Credit Manager/ Printer/ Urologist/ Surgeon Optometrist/ Comm Rec Director/ Salesmen, Computer/ School Super 65/ Physician 49/ Bus Ed Teacher/ Mathematician Math-Science Teacher/ Advertising Men
51	Public Admin/ Accountant/ Chemist/ Office Worker/ Guidance Counselor/ Personnel Director/ Salesmen, Encyclopedia/ YMCA Staff Legislator/ CPA 44/ Physicist 27/ Salesmen, Life 66/ Osteopath
50	Rehab Counselor/ Salesmen, 3M/ Pharmacist/ Salesmen, Steel/ Salesmen, PG&E/ School Super 30/ CPA 65/ Carpenter Salesmen, Auto/ Army Officer/ Generals and Admirals/ Judge/ Navy Officer/ Corp Pres 65/ Animal Husbandry Prof/ Astronaut Authors
49	Physician 27/ Salesmen, Life 31/ Engineer/ Production Manager/ Policemen/ Pilot/ Dentist/ Funeral Director/ Air Force Officer Banker 64
48	Vet 66/ Farmer 36/ Purch Agent/ Forest Service Men/ Sales Manager/ Banker 34/ Lawyer 49/ Corp Pres 35/ Lawyer 27 Petroleum Engineer/ Vet 49
47	Salesmen, Real Estate/ Governor
46	
45	
44	Farmer 67
43	
42	
41	
40	
39	
38	
37	
36	
35	

Table 46
Male Occupations Mean Scores on the NATURE Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	
63	
62	
61	
60	
59	Farmer 36/ Animal Husbandry Prof
58	Forest Service Men
57	Vet 49
56	Vet 66/ Biologist
55	Orthopedic Surgeon
54	Radiologist/ Urologist/ Physiatrist
53	Pediatrician/ Surgeon/ Minister 27/ Physical Therapist/ Farmer 67/ Osteopath/ Pathologist/ Neurological Surgeon
52	Public Admin/ YMCA Sec/ Dentist/ Physician 49/ Psychiatrist/ Artist/ Internist/ NIAL Member
51	YMCA PD/ Physician 27/ Comm Rec Director/ Generals and Admirals/ Math-Science Teacher
50	Rehab Counselor/ Architect/ Chemist/ School Super 30/ Unitarian Minister/ Guidance Counselor/ Mpls Symphony/ School Super 65 Anthropologist/ Governor
49	Psychologist 47/ Soc Sci Teacher/ Social Worker 53/ Psychologist 31/ Credit Manager/ Psychologist (Exp)/ Personnel Director Carpenter/ Elem Teacher/ Policemen/ Librarian/ Pulitzer Prize/ Army Officer/ Banker 34/ Legislator/ CPA 44/ Psychologist 49 Music Teacher/ Interior Decorator
48	Pharmacist/ Sociologist/ Accountant/ Engineer/ McKnight Fellow/ Pilot/ Optometrist/ Lawyer 49/ Corp Pres 35/ Funeral Director Minister 65/ Physicist 27/ Bus Ed Teacher/ Musician/ Physicist 67/ Astronaut/ Mathematician/ Authors/ Student Personnel
47	Priest/ Office Worker/ Salesmen, Life 31/ Salesmen, PG&E/ Printer/ Production Manager/ Photographer/ Sales, Encyclopedia Judge/ YMCA Staff/ Computer Programmer/ Corp Pres 65/ Banker 64/ Social Worker 67/ Petroleum Engineer
46	Salesmen, Real Estate/ Economist/ Sales Manager/ Danforth Fellow/ Navy Officer
45	Cham Comm Exec/ Salesmen, Steel/ CPA 65/ Purch Agent/ Political Scientist/ Air Force Officer/ Lawyer 27/ Newsmen Advertising Men
44	Salesmen, Life 66
43	Salesmen, Auto/ Salesmen, Computer
42	Salesmen, 3M
41	Salesmen, 3M applicants
40	
39	
38	
37	
36	
35	

Table 47

Male Occupations Mean Scores on the OFFICE PRACTICES Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	Bus Ed Teacher
64	
63	
62	
61	Banker 34/ Banker 64
60	
59	Office Worker
58	Accountant/ Soc Sci Teacher/ Credit Manager
57	
56	
55	Rehab Counselor/ Guidance Counselor/ Comm Rec Director/ Math-Science Teacher
54	Salesmen, 3M/ YMCA Sec/ Salesmen, PG&E/ CPA 65/ CPA 44/ School Super 65
53	Public Admin/ Purch Agent/ Policemen/ Legislator/ Funeral Director
52	Salesmen, 3M applicants/ Pharmacist/ Farmer 67/ Governor
51	Vet 66/ Cham Comm Exec/ YMCA PD/ School Super 30/ Printer/ Carpenter/ Elem Teacher/ Salesmen, Auto, Librarian/ Army Officer YMCA Staff/ Minister 27/ Air Force Officer
50	Salesmen, Real Estate/ Social Worker 53/ Salesmen, Steel/ Personnel Director/ Farmer 36/ Forest Service Men/ Optometrist Navy Officer/ Minister 65/ Music Teacher
49	Priest/ Salesmen, Encyclopedia/ Sales Manager/ Computer Programmer/ Lawyer 49/ Generals and Admirals/ Physical Therapist Petroleum Engineer/ Vet 49
48	Salesmen, Life 31/ Production Manager/ Salesmen, Computer/ Corp Pres 35/ Physiatrist/ Animal Husbandry Prof/ Osteopath Interior Decorator/ Student Personnel
47	Urologist/ Social Worker 67
46	Psychologist 47/ Sociologist/ Radiologist/ Pediatrician/ Unitarian Minister/ Pilot/ Dentist/ Mathematician
45	Judge/ Psychologist 31/ Chemist/ Lawyer 27/ Corp Pres 65/ Psychologist 49/ Musician/ Orthopedic Surgeon
44	Biologist/ Economist/ Political Scientist/ Mpls Symphony/ Physician 49/ Psychiatrist/ Advertising Men
43	Engineer/ Psychologist (Exp)/ Newsmen/ Phsyicist 27/ Salesmen, Life 66/ Internist/ Astronaut/ Neurological Surgeon
42	Physician 27/ Surgeon/ Pathologist
41	Architect/ McKnight Fellow/ Pulitzer Prize/ Physicist 67
40	Danforth Fellow/ Authors/ Anthropologist
39	Photographer/ NIAL Member
38	
37	Artist
36	
35	

Table 48

Male Occupations Mean Scores on PUBLIC SPEAKING Scale

Mean Standard Score	
70	
69	
68	
67	Legislator
66	Governor
65	Unitarian Minister/ Minister 65
64	
63	Priest/ Cham Comm Exec/ Salesmen, Real Estate/ Political Scientist/ Salesmen, Computer
62	Salesmen, 3M applicants/ Minister 27/ School Super 65/ Salesmen, Life 66
61	Salesmen, 3M/ Comm Rec Director/ Danforth Fellow/ Social Worker 67
60	YMCA Sec/ Social Worker 53/ YMCA Staff/ Judge/ Newsmen/ Student Personnel
59	Sociologist/ Economist/ Elem Teacher/ Lawyer 49
58	Soc Sci Teacher/ Salesmen, Steel, Guidance Counselor/ Generals and Admirals/ Navy Officer/ Astronaut
57	Rehab Counselor/ Credit Manager/ School Super 30/ Air Force Officer/ McKnight Fellow/ Lawyer 27
56	Public Admin/ CPA 65/ Optometrist/ Corp Pres 65/ Music Teacher/ Bus Ed Teacher
55	Salesmen, Life 31/ Librarian/ Pulitzer Prize/ Army Officer/ Physiatrist/ Animal Husbandry Prof
54	Psychologist 47/ YMCA PD/ Salesmen, PG&E/ Personnel Director/ Computer Programmer/ Physical Therapist/ Psychologist 49 Petroleum Engineer/ Neurological Surgeon
53	Vet 66/ Pediatrician/ Sales Manager/ Psychiatrist/ Orthopedic Surgeon/ Anthropologist
52	Psychologist 31/ Funeral Director/ Biologist/ Urologist/ Salesmen, Auto/ Physicist 67/ Internist/ Math-Science Teacher NIAL Member
51	Salesmen, Real Estate/ Accountant/ Radiologist/ Photographer/ Psychologist (Exp)/ Surgeon/ Policemen/ CPA 44/ Banker 64 Osteopath/ Authors/ Interior Decorator/ Advertising Men
50	Office Worker/ Printer/ Production Manager/ Purch Agent/ Mpls Symphony/ Banker 34/ Physician 49/ Musician/ Pathologist
49	Pharmacist/ Farmer 36/ Pilot/ Vet 49
48	Physician 27/ Corp Pres 35/ Forest Service Men/ Dentist/ Mathematician
47	Chemist/ Engineer/ Physicist 27
46	Architect/ Carpenter
45	Farmer 67
44	Artist
43	
42	
41	
40	
39	
38	
37	
36	
35	

Table 49
Male Occupations Mean Scores on the RECREATIONAL LEADERSHIP Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	
63	
62	
61	YMCA PD
60	
59	Salesmen, 3M applicant/ Comm Rec Director
58	Salesmen, 3M/ YMCA Staff/ Physical Therapist
57	
56	
55	Policemen
54	Salesmen, Steel/ Elem Teacher/ Salesmen, Auto/ Salesmen, Computer
53	Soc Sci Teacher/ Salesmen, Life 66/ Social Worker 67
52	Credit Manager/ CPA 65/ Pilot/ Army Officer/ Legislator/ Air Force Officer/ Math-Science Teacher
51	YMCA Sec/ Salesmen, PG&E/ Forest Service Men/ School Super 65/ Osteopath/ Petroleum Engineer/ Orthopedic Surgeon/ Astronaut Vet 49
50	Vet 66/ Cham Comm Exec/ Printer/ Guidance Counselor/ Urologist/ Computer Programmer/ Generals and Admirals/ CPA 44/Newsmen Bus Ed Teacher
49	Rehab Counselor/ Social Worker 53/ Office Worker/ Salesmen, Life 31/ Personnel Director/ Salesmen, Encyclopedia/ Optometrist Dentist/ Navy Officer/ Minister 65/ Banker 64/ Physiatrist/ Neurological Surgeon
48	Priest/ Salesmen, Real Estate/ Pharmacist/ Public Admin/ Accountant/ Radiologist/ Pediatrician/ Production Manager Carpenter/ Farmer 36/ Surgeon/ Purch Agent/ Sales Manager/ Animal Husbandry Prof/ Farmer 67/ Student Personnel/ Governor
47	School Super 30/ Unitarian Minister/ Lawyer 49/ Minister 27/ Funeral Director/ Lawyer 27/ Corp Pres 65/ Physician 49 Psychiatrist/ Musician
46	Psychologist 47/ Physician 27/ Chemist/ Banker 34/ Advertising Men
45	Sociologist/ Engineer/ Danforth Fellow/ Corp Pres 35/ Music Teacher/ Internist
44	Psychologist 31/ Photographer/ Mpls Sumphony/ Judge/ Pathologist
43	Architect/ Biologist/ Economist/ McKnight Fellow/ Pulitzer Prize/ Psychologist 49/ Artist/ Authors
42	Psychologist (Exp)/ Political Scientist/ Librarian
41	Physicist 67/ Anthropologist
40	Physicist 27
39	Mathematician/ Interior Decorator
38	NIAL Member
37	
36	
35	

Table 50
Male Occupations Mean Scores on RELIGIOUS ACTIVITIES Scale

Mean Standard Score	
75	
74	
73	
72	
71	YMCA Sec/ Minister 27
70	Minister 65
69	YMCA Staff
68	
67	Priest
66	YMCA PD
65	
64	Unitarian Minister
63	
62	
61	Comm Rec Director/ Legislator
60	Rehab Counselor/ Physical Therapist
59	Salesmen, 3M/ Cham Comm Exec/ Social Worker 55/ Guidance Counselor/ School Super 65/ Student Personnel
58	Salesmen, 3M applicant/ Credit Manager/ Salesmen, Encyclopedia/ Elem Teacher/ Danforth Fellow/ Salesmen, Life 66 Social Worker 67/ Music Teacher
57	Soc Sci Teacher
56	Salesmen, Steel/ Optometrist/ Banker 64/ Physiatrist/ Bus Ed Teacher
55	Sociologist/ School Super 30/ CPA 65/ Funeral Director/ Farmer 67
54	Vet 66/ Librarian/ Salesmen, Computer/ Math-Science Teacher/ Governor
53	Computer Programmer/ Judge/ Lawyer 49/ Air Force Officer/ Animal Husbandry Prof/ Petroleum Engineer
52	Salesmen, Life 31/ Policemen/ Mpls Symphony/ Navy Officer/ Astronaut/ Vet 49
51	Public Admin/ Radiologist/ Office Worker/ Personnel Director/ Salesmen, Auto/ Banker 34/ Political Scientist/ Newsmen Generals and Admirals/ Orthopedic Surgeon/ Neurological Surgeon
50	Pharmacist/ Accountant/ Pediatrician/ Biologist/ Urologist/ Economist/ Pulitzer Prize/ Army Officer/ CPA 44/ Corp Pres 65 Musician/ Osteopath
49	Psychologist 47/ Salesmen, PG&E/ Printer/ Production Manager/ Farmer 36/ McKnight Fellow/ Sales Manager/ Physician 49 Interior Decorator
48	Carpenter/ Purch Agent/ Corp Pres 35/ Psychologist 49/ Mathematician/ NIAL Member
47	Salesmen, Real Estate/ Engineer/ Photographer/ Surgeon/ Forest Service Men/ Dentist/ Lawyer 27/ Physicist 27/ Psychiatrist
46	Pilot/ Physicist 67/ Pathologist/ Internist
45	Architect/ Physician 27/ Chemist/ Authors/ Anthropologist/ Advertising Men
44	Psychologist 31/ Psychologist (Exp)
43	Artist
42	
41	
40	
39	
38	
37	
36	
35	

Table 51
Male Occupations Mean Scores on the SALES Scale

Mean Standard Score	
70	
69	
68	
67	Salesmen, 3M applicants
66	Salesmen, 3M
65	
64	Salesmen, PG&E/ Salesmen, Encyclopedia
63	Salesmen, Auto/ Salesmen, Computer
62	
61	Salesmen, Steel/ Salesmen, Life 31/ Salesmen, Life 66
60	
59	Salesmen, Real Estate/ Sales Manager/ Bus Ed Teacher
58	
57	
56	YMCA Sec/ Credit Manager/ Legislator
55	Pharmacist/ Cham Comm Exec/ Funeral Director
54	Office Worker/ Guidance Counselor
53	Rehab Counselor/ Soc Sci Teacher/ YMCA Staff/ School Super 65
52	YMCA PD/ Corp Pres 35/ Air Force Officer/ Purch Agent/ Comm Rec Director/ Banker 34/ Advertising Men/ Banker 64/ Farmer 67
51	Vet 66/ Corp Pres 65/ Petroleum Engineer/ Vet 49
50	Accountant/ Social Worker 53/ CPA 65/ Production Manager/ Personnel Director/ Carpenter/ Optometrist/ Physical Therapist
	Music Teacher/ Interior Decorator/ Math-Science Teacher/ Governor
49	School Super 30/ Farmer 36/ Elem Teacher/ Policemen/ Minister 27/ Navy Officer/ Minister 65
48	Priest/ Printer/ Army Officer/ CPA 44/ Physiatrist/ Social Worker 67/ Osteopath
47	Public Admin/ Radiologist/ Unitarian Minister/ Urologist/ Forest Service Men/ Pilot/ Computer Programmer/ Lawyer 49
	Animal Husbandry Prof/ Musician/ Orthopedic Surgeon
46	Psychologist 47/ Dentist/ Generals and Admirals/ Astronaut/ Neurological Surgeon/ Student Personnel
45	Pediatrician/ Chemist/ Engineer/ Surgeon/ Librarian/ Physician 49/ Psychiatrist/ Psychologist 49
44	Sociologist/ Mpls Symphony/ Judge/ Newsmen/ Lawyer 27/ Internist
43	Architect/ Psychologist 31/ Physician 27/ Biologist/ Economist/ Photographer
42	Psychologist (Exp)/ McKnight Fellow/ Political Scientist/ Danforth Fellow/ Pathologist/ Mathematician
41	Pulitzer Prize/ Physicist 27/ Physicist 67/ Artist/ Authors
40	Anthropologist
39	NIAL Member
38	
37	
36	
35	

Table 52
Male Occupations Mean Scores on the SCIENCE Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	
63	
62	Physicist 27/ Physicist 67
61	Chemist
60	Biologist/ Psychologist (Exp)/ Pathologist
59	Psychologist 31/ Animal Husbandry Professor/ Neurological Surgeon
58	Pediatrician/ Urologist/ Internist/ Mathematician/ Math-Science Teacher
57	Radiologist/ Engineer/ Air Force Officer/ Physiatrist/ Psychiatrist/ Psychologist 49/ Orthopedic Surgeon/ Astronaut
56	Psychologist 47/ Surgeon/ Anthropologist
55	Physician 27/ Economist/ Optometrist/ Computer Programmer/ Danforth Fellow/ Physician 49/ Physical Therapist/ Petrol Engineer
54	Army Officer
53	Pilot/ Dentist/ Generals and Admirals/ Osteopath
52	Vet 66/ Pharmacist/ Public Admin/ Architect/ Sociologist/ School Super 30/ Mpls Symphony/ Salesmen, Computer/ CPA 44 Navy Officer
51	Rehab Counselor/ YMCA PD/ Unitarian Minister/ Production Manager/ Personnel Director/ Elem Teacher/ Librarian/ Minister 27 NIAL Member/ Student Personnel
50	Accountant/ Guidance Counselor/ Corp Pres 35/ Farmer 36/ Forest Service Men/ Political Scientist/ Policemen/ School Super 65 Corp Pres 65/ Musician/ Artist/ Vet 49
49	YMCA Sec/ Social Worker 53/ Credit Manager/ Salesmen, PG&E/ Printer/ Photographer/ Judge/ Lawyer 49
48	Salesmen, 3M/ Priest/ Salesmen, Steel/ Office Worker/ CPA 65/ Purch Agent/ Pulitzer Prize/ Comm Rec Director/ Lawyer 27 Music Teacher/ Bus Ed Teacher
47	Soc Science Teacher/ Carptenter/ McKnight Fellow/ Sales Manager/ YMCA Staff/ Legislator/ Minister 65/ Social Worker 67 Governor
46	Salesmen, 3M applicant/ Cham Comm Exec/ Advertising Men/ Banker 64/ Author
45	Salesmen, Encyclopedia/ Salesmen, Auto/ Newsmen
44	Salesmen, Life 31/ Funeral Director/ Banker 34
43	Salesmen, Real Estate
42	Salesmen, Life 66/ Farmer 67/ Interior Decorator
41	
40	
39	
38	
37	
36	
35	

Table 53

Male Occupations Mean Scores on the SOCIAL SERVICE Scale

Mean Standard Score	
70	
69	YMCA Sec
68	
67	Social Worker 53/ YMCA Staff/ Minister 65
66	Social Worker 67
65	YMCA PD/ Minister 27
64	
63	Rehab Counselor/ Priest/ Unitarian Minister/ Guidance Counselor
62	Soc Sci Teacher
61	Psychologist 47/ Comm Rec Director/ Student Personnel
60	Salesmen, 3M/ Legislator/ Physical Therapist
59	Salesmen, 3M applicants/ Sociologist/ Elem Teacher/ Danforth Fellow/ School Super 65/ Music Teacher
58	Salesmen, Encyclopedia/ Bus Ed Teacher
57	School Super 30
56	Cham Comm Exec/ Credit Manager/ Librarian/ Physiatrist/ Salesmen, Life 66/ Math-Science Teacher/ Governor
55	Pediatrician/ Salesmen, Life 31/ Policemen/ Political Scientist/ Mpls Symphony/ Funeral Director/ Psychiatrist
54	Pharmacist/ Public Admin/ Salesmen, Steel/ Personnel Director/ Optometrist/ Lawyer 49/ Psychologist 49/ Musician/ Vet 49
53	Vet 66/ Salesmen, PG&E/ CPA 65/ Economist/ McKnight Fellow/ Newsmen/ Banker 64/ Farmer 67/ Osteopath
52	Judge/ Office Worker/ Printer/ Carpenter/ Salesmen, Auto/ Banker 34/ Salesmen, Computer/ CPA 44/ Internist
51	Accountant/ Radiologist/ Urologist/ Photographer/ Forest Service Men/ Computer Programmer/ Corp Pres 35/ Air Force Officer Physician 49/ Orthopedic Surgeon/ Interior Decorator/ NIAL Member
50	Salesmen, Real Estate/ Production Manager/ Psychologist (Exp)/ Farmer 36/ Sales Manager/ Pulitzer Prize/ Lawyer 27 Corp Pres 65/ Anthropologist/ Neurological Surgeon
49	Psychologist 31/ Physician 27/ Biologist/ Surgeon/ Purch Agent/ Dentist/ Navy Officer/ Animal Husbandry Prof Petroleum Engineer/ Pathologist/ Advertising Men
48	Army Officer/ Mathematician
47	Architect/ Chemist/ Engineer/ Pilot/ Generals and Admirals/ Physicist 27/ Physicist 67/ Astronaut/ Authors
46	Artist
45	
44	
43	
42	
41	
40	
39	
38	
37	
36	
35	

Table 54
Male Occupations Mean **Scores** on the TEACHING Scale

Mean Standard Score	
70	
69	
68	
67	
66	Music Teacher
65	
64	
63	Elem Teacher
62	Librarian/ Danforth Fellow/ Minister 65/ School Super 65
61	School Super 30/ Unitarian Minister/ Guidance Counselor/ Minister 27/ Bus Ed Teacher/ Student Personnel
60	Rehab Counselor/ Soc Sci Teacher/ Social Worker 67
59	Priest/ Sociologist/ Mpls Symphony/ Comm Rec Director/ YMCA Staff/ Physiatrist
58	Social Worker 53/ Biologist/ McKnight Fellow/ Political Scientist/ Mathematician/ Math-Science Teacher/ Neurological Surgeon
57	Psychologist 47/ Psychologist 31/ Pediatrician/ Legislator/ Physical Therapist/ Psychologist 49
56	YMCA Sec/ Economist/ Psychiatrist/ Animal Husbandry Prof/ Musician/ Physicist 67/ Pathologist/ Internist/ Anthropologist
55	YMCA PD/ Psychologist (Exp)/ Judge/ Salesmen, Encyclopedia/ Optometrist/ Pulitzer Prize/ Generals and Admirals/ Navy Officer Physicist 27/ Orthopedic Surgeon/ NIAL Member
54	Salesmen, 3M applicant/ Cham Comm Exec/ Credit Manager/ Air Force Officer/ Surgeon/ Computer Programmer/ Lawyer 49 Salesmen, Computer/ Newsmen
53	Salesmen, 3M/ Radiologist/ Photographer/ Army Officer/ Salesmen, Life 66/ Astronaut
52	Vet 66/ CPA 65/ Urologist/ Personnel Director/ Corp Pres 65/ Physician 49/ Governor
51	Public Admin/ Chemist/ Petroleum Engineer/ Interior Decorator
50	Physician 27/ Salesmen, Steel/ CPA 44
49	Accountant / Lawyer 27/ Banker 64/ Osteopath
48	Salesmen, PG&E/ Printer/ Policemen/ Dentist/ Vet 49
47	Pharmacist/ Architect/ Office Worker/ Salesmen, Life 31/ Production Manager/ Advertising Men/ Authors
46	Engineer/ Corp Pres 35/ Carpenter/ Farmer 36/ Salesmen, Auto/ Forest Service Men/ Pilot/ Artist
45	Sales Manager
44	Funeral Director/ Banker 34/ Farmer 67
43	Salesmen, Real Estate/ Purch Agent
42	
41	
40	
39	
38	
37	
36	
35	

Table 55
Male Occupations Mean Scores on TECHNICAL SUPERVISION Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	
63	
62	
61	
60	
59	
58	
57	Air Force Officer/ Petroleum Engineer
56	Production Manager
55	Chemist/ Army Officer
54	Engineer/ Carpenter/ Pilot/ Salesmen, Computer
53	Personnel Director/ Navy Officer/ Orthopedic Surgeon/ Astronaut
52	Printer/ Neurological Surgeon
51	Public Admin/ Radiologist/ Salesmen, Steel/ Salesmen, PG&E/ Corp Pres 35/ Urologist/ Computer Programmer/ Corp Pres 65 Math-Science Teacher
50	Salesmen, 3M applicant/ Salesmen, 3M/ Purch Agent/ Policemen/ Generals and Admirals/ CPA 44/ Physical Therapist/ Farmer 67
49	Vet 66/ Accountant/ Pediatrician/ Credit Manager/ Optometrist/ Comm Rec Director/ Legislator/ Physiatrist Bus Ed Teacher
48	Rehab Counselor/ Cham Comm/ Social Worker 53/ Office Worker/ CPA 65/ Psychologist (Exp)/ Surgeon/ Physicist 27/ Psychiatrist Psychologist 49/ Animal Husbandry Prof
47	YMCA Sec/ YMCA PD/ Psychologist 31/ Guidance Counselor/ Economist/ Farmer 36/ Elem Teacher/ Salesmen, Auto/ Sales Manager YMCA Staff/ Physicist 67/ Osteopath/ Pathologist
46	Psychologist 47/ Pharmacist/ Soc Sci Teacher/ Unitarian Minister/ Forest Service Men/ Dentist/ Lawyer 49/ Funeral Director School Super 65/ Banker 64/ Physician 49/ Social Worker 67/ Internist/ Vet 49
45	Architect/ Biologist/ Student Personnel
44	Priest/ Sociologist/ Physician 27/ Salesmen, Encyclopedia/ Librarian/ Banker 34/ Minister 27/ Minister 65/ Musician Mathematician
43	Salesmen, Real Estate/ School Super 30/ Political Scientist/ Mpls Symphony/ Anthropologist
42	Music Teacher/ Governor
41	Salesmen, Life 31/ Photographer/ Lawyer 27/ Advertising Men
40	Danforth Fellow/ Newsmen/ Salesmen, Life 66/ Interior Decorator
39	Judge/ Artist
38	McKnight Fellow/ NIAL Member
37	Pulitzer Prize/ Authors
36	
35	

Table 56

Male Occupations Mean Scores on the WRITING Scale

Mean Standard Score	
70	
69	
68	
67	
66	
65	
64	Unitarian Minister/ Librarian/ Pulitzer Prize/ Newsmen
63	McKnight Fellow/ Authors
62	Political Scientist/ Danforth Fellow/ NIAL Member
61	Minister 65
60	Psychologist 47/ Judge/ Photographer/ Minister 27/ Sociologist
59	Anthropologist/ Neurological Surgeon/ Social Worker 53
58	Economist/ Elem Teacher/ Legislator/ Social Worker 67/ Music Teacher/ Student Personnel/ Advertising Men/ Cham Comm Exec Psychologist 31
57	Rehab Counselor/ Priest/ Mpls Symphony/ Lawyer 49/ School Super 65/ Physiatrist/ Psychiatrist/ Psychologist 49/ Governor YMCA Sec/ Pediatrician
56	School Super 30/ Psychologist (Exp)/ Salesmen, Encyclopedia/ Lawyer 27/ Musician
55	Salesmen, 3M applicants/ Salesmen, 3M/ Printer/ Guidance Counselor/ Biologist/ Personnel Director/ Comm Rec Director Army Officer/ Generals and Admirals/ Artist/ Internist/ Interior Decorator/ Public Admin/ Soc Sci Teacher
54	Credit Manager/ YMCA Staff/ Salesmen, Life 66/ Bus Ed Teacher/ Physicist 67/ Orthopedic Surgeon/ Radiologist
53	Urologist/ Surgeon/ Computer Programmer/ Salesmen, Computer/ Navy Officer/ Physical Therapist/ Pathologist/ YMCA PD
52	Salesmen, Steel/ Office Worker/ Salesmen, Life 31/ Salesmen, PG&E/ Air Force Officer/ Optometrist/ CPA 44/ Physician 49 Astronaut/ Mathematician/ Architect
51	Corp Pres 35/ CPA 65/ Sales Manager/ Animal Husbandry Prof/ Accountant/ Chemist
50	Forest Service Men/ Policemen/ Pilot/ Corp Pres 65/ Osteopath/ Petroleum Engineer/ Math-Science Teacher Salesmen, Real Estate/ Physician 27
49	Engineer/ Production Manager/ Salesmen, Auto/ Dentist/ Banker 34/ Physicist 27/ Pharmacist
48	Vet 66/ Funeral Director/ Farmer 36/ Purch Agent/ Banker 64
47	Carpenter
46	Vet 49
45	
44	
43	Farmer 67
42	
41	
40	
39	
38	
37	
36	
35	

One large block of these samples came from Professor Strong's files, including those used to build the occupational scales, another block came from the work of our research institute at Minnesota, and the remainder came from various other investigators working with the SVIB. Practically everyone in the latter group who was asked for his data was cooperative--if the information had not been lost or discarded--and we would like to publicly acknowledge our gratitude for their help.

The mean scores in Tables 35 through 56 are reassuring. Occupations who should score high did so; military officers scored highest on the Military Activities scale, ministers scored highest on the Religious Activities scale, scientists scored highest on the Science scale and so on--there were virtually no surprises. In fact, the results are so straight-forward as to lead one to that conclusion voiced frequently by students in introductory psychology courses: "You had to do all that research just to find that out?"

Clearly, scores on these scales are related, in a highly significant fashion, to the occupations of adult men. Anyone who would understand these scales thoroughly must spend some time studying these tables of means, both to learn more about the relative levels of scores on each scale, and to learn more about each occupation.

These rank-ordered means provide a firmer foundation for ascertaining the importance of scores at various levels. Scanning these tables suggests that scores above 58 or 59 are high enough to be important from an occupational standpoint; scores below 42 or 43 indicate important areas of rejection, at least among adults. Thus, our recommendation is that scores above 58 be considered HIGH, those below 42 LOW. Some sharpening of this interpretation will obviously be necessary, especially with teenagers and especially with the Adventure scale where we know high scores will likely decrease over time, but these figures can be used as initial landmarks.

Though these data are positive and meaningful, one disappointing aspect--at least for the senior author--was the magnitude of differences between extreme groups. On most of the scales, the range from the highest mean to the lowest was about 20 standard score points, or 2 standard deviations. While that is a substantial separation, especially when viewed against results from other tests (if reported in percentiles, that would be the difference between the 15th and 85th percentiles), still it is less than the three or four standard deviations found between extreme scores on the regular SVIB occupational scales. To achieve purity of content, and thus easier interpretation, empirical validity has suffered.

Predictive Validity

The predictive validity of these scales can be demonstrated by reanalyzing some SVIBs collected by Berdie and Schletzer (Berdie, 1960; Schletzer, 1963). Berdie identified students who graduated from the University of Minnesota in curricula that are highly predictive of eventual occupations, specifically, Accounting, Dentistry, Journalism (which is less predictive than the others), Law, Mechanical Engineering, and Medicine. Each of these students had completed the SVIB as high school seniors, and Berdie's report indicates that there were substantial relationships between their high school SVIB profile and the curriculum they selected. Schletzer, for her PhD dissertation, located and retested these same students approximately four years after they graduated from the University of Minnesota, roughly eight to ten years after the initial testing. Although these groups were small, approximately 30 in each of the six curricula, the results are very important as no other occupational samples have been tested before college and retested several years later after entry into the occupation.

The relevant data are presented in the next two tables. In Table 57 are listed, for the total group, test-retest correlations, test and retest means and standard deviations. For each of the occupational subgroups, the test and retest means are presented, and the mean changes larger than four points are identified. Four points, which is four-tenths of an SD, is probably the smallest practical difference worth attending to among these small samples.

As an aid to interpretation of the data in Table 57, Table 58 was prepared. In this table are listed for each subgroup:

1. Their three highest scores as high school seniors
2. Their three highest scores on retest, when they were roughly 3-4

Insert Tables 57 and 58 about here

Table 57

Mean Test and Retest Profiles for the Berdie-Schletzer Curricular Groups

		TOTAL SAMPLE					Accountants(N=24)			Dentists (N=30)			Journalists(N=21)			Lawyers (N=32)			Mechanical Engineers (N=38)			Physicians (N=26)		
							Test	Retest		Test	Retest		Test	Retest		Test	Retest		Test	Retest		Test	Retest	
	r_{t-r}	M	SD	M	SD	Ch	M	M	C	M	M	C	M	M	C	M	M	C	M	M	C	M	M	C
1 Public Speaking	.67	53	10.8	57	11.0	+4	52	55		46	47		55	61	+6	63	65		50	54	+4	54	59	+5
2 Law/Politics	.70	53	10.6	57	10.6	+4	55	60	+5	47	50		54	59	+5	61	66	+5	50	55	+5	52	55	
3 Business Management	.46	49	10.3	50	10.5		54	56		46	43		51	53		56	54		46	51	+5	45	43	
4 Sales	.38	53	10.1	48	9.5	-5	58	50	-8	50	44	-6	58	54	-4	58	49	-9	50	49		48	42	-6
5 Merchandising	.52	50	9.9	50	10.4		56	56		47	45		52	54		56	52	-4	47	50		46	43	
6 Office Practices	.56	51	10.2	46	9.9	-5	61	55	-6	50	43	-7	49	47		53	48	-5	47	45		46	42	-4
7 Military Activities	.43	53	9.0	50	9.4		53	48	-5	52	52		53	51		55	52		53	51		50	46	-4
8 Technical Supervision	.37	48	9.6	50	11.7		46	50	+4	48	47		46	42	-4	47	45		53	61	+8	46	48	
9 Mathematics	.69	53	8.6	54	9.6		54	57		53	53		44	41		49	50		59	60		57	59	
10 Science	.60	52	9.5	53	9.3		48	50		54	55		46	45		46	47		58	58		60	60	
11 Mechanical	.72	48	9.9	48	10.9		45	46		49	49		45	41	-4	42	42		57	58		45	47	
12 Nature	.64	42	9.8	45	10.6		38	39		44	49	+5	41	40		39	41		44	47		46	50	+4
13 Agriculture	.53	43	10.0	44	10.1		40	40		43	46		42	40		40	41		47	47		45	44	
14 Adventure	.47	58	10.5	57	11.0		56	53		59	56		57	59		59	56		62	61		55	53	
15 Recreational Leadership	.65	52	9.8	50	9.8		55	52		53	53		51	49		53	49	-4	51	53		46	47	
16 Medical Service	.56	52	9.8	55	10.5		48	50		57	63	+6	48	49		50	50		49	52		62	64	
17 Social Service	.44	52	9.6	52	9.7		55	54		50	50		53	56		53	53		48	49		55	51	-4
18 Religious Activities	.38	52	10.4	53	11.3		52	53		50	52		54	55		54	52		50	53		54	56	
19 Teaching	.36	45	9.3	53	8.3	+8	46	54	+8	42	52	+10	47	55	+8	46	53	+7	42	51	+9	46	55	+9
20 Music	.55	46	10.3	51	9.4	+6	48	51		44	48	+4	48	52	+4	50	53		41	49	+8	48	56	+8
21 Art	.57	45	8.5	50	9.8	+5	43	46		45	51	+6	48	55	+7	45	49	+4	44	49	+5	45	51	+6
22 Writing	.63	49	9.2	53	10.1	+4	50	51		43	45		58	64	+6	56	60	+4	44	49	+5	48	54	+6
Median	.56																							

Table 58

Three Highest Test and Retest Means and Largest Gains

for Berdie-Schletzer Six Curricular Groups

	Accountants		Dentists		Journalists	
Test Means	Office Practices	61	Adventure	59	Writing	58
	Sales	58	Medical Service	57	Sales	58
	Merchandising	56	Science	54	Adventure	57
	Adventure	56				
Retest Means	Law/Politics	60	Medical Service	65	Writing	64
	Mathematics	57	Adventure	56	Public Speaking	61
	Business Management	56	Science	55	Law/Politics	59
	Merchandising	56			Adventure	59
Gains	Teaching	46-54	Teaching	42-52	Teaching	47-55
	Law/Politics	55-60	Medical Service	57-63	Art	48-55
	Technical Supervision	46-50	Art	45-51	Writing	58-64
					Public Speaking	55-61
	Lawyers		**Mechanical Engineers**		**Physicians**	
Test Means	Public Speaking	63	Adventure	62	Medical Service	62
	Law/Politics	61	Mathematics	59	Science	60
	Adventure	59	Science	58	Mathematics	57
Retest Means	Law/Politics	66	Technical Supervision	61	Medical Service	64
	Public Speaking	65	Adventure	61	Science	60
	Writing	60	Mathematics	60	Public Speaking	59
					Mathematics	59
Gains	Teaching	45-53	Teaching	42-51	Teaching	46-55
	Law/Politics	61-66	Technical Supervision	53-61	Music	48-56
	Art	45-49	Music	41-49	Art	45-51
	Writing	56-60			Writing	48-54

years beyond their final degree.

3. The three largest gains for each sample, which frequently were not among the highest scores on either testing.

Although, again, there is no one index to determine the predictive efficiency of these scales, the results are reassuringly meaningful. The scales that each group scored highest on, both at Test and Retest, are, with a few exceptions, those most related to their work. The exceptions were almost all due to the "Adventure" scale; this was among the three highest scores for five of the samples at Test, and remained among the highest for three at the Retest. This personality scale just doesn't operate as do the vocational interests scales. Other than this scale, the other high scores were appropriate. The accountants scored highest on the business-oriented scales: Office Practices, Sales, and Merchandising; the dentists and physicians scored highest on the Medical Service and Science scales, and so forth.

The patterns of high scores on both the Test and Retest administrations again make it very clear that the scales have a substantial relationship to the individual's occupational choice.

The gains reported in Table 58 are worthy of note also as they indicate areas of interests showing the greatest increase over the college years, irrespective of initial level of score. In general, the changes should please university faculties. The largest gain for all six groups was on the Teaching scale, ranging from seven points among the lawyers to ten points among the dentists, a full standard deviation. All of the groups also showed increased scores on the Art, Music, and Writing scales, areas particularly important to a liberal arts college faculty. Interestingly, this tendency was less pronounced among the accountants who were primarily students drawn from the Business School. However, the other non-liberal arts sample--the mechanical engineers--showed the same increases as the other students.

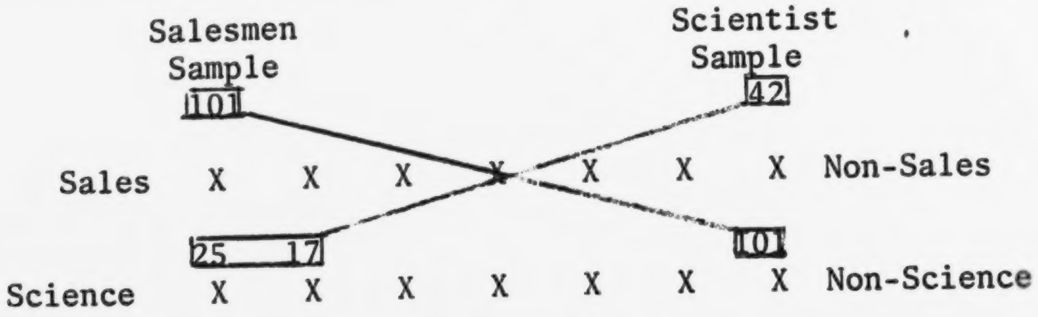
These increases are very similar to those found among the Stanford students in the reliability study reported earlier, showing that interests in teaching and in cultural activities increase during the college years. The same pattern, though less pronounced, appeared in the Harvard test-retest profile in Table 32. These highly selected students had higher scores in these areas when initially tested and their scores did not increase as much as the Minnesota and Stanford students.

Salesmen and Scientists

Further predictive validity information has been developed by studying two subsets of individuals in the norm group. As these men have been tested twice, once in 1930 as 16 year olds and again in 1966 as 52 year olds, it has been possible to study how their test results relate to their adult occupations.

Of the 1943 boys tested in 1930, 1214 (63 percent) have been retested in 1966-67. Twenty-five percent could not be located currently, 4 percent refused to cooperate in this study, and 8 percent were deceased. (When these Basic Scales were normed, only 647 retests were available.)

When retested as adults, these men were asked to fill in a short check-list describing their jobs. This check-list contained "semantic differential" type items, that is, pairs of statements reflecting opposite extremes, and each man was asked to indicate where his job fell on a line between these pairs. Two of the items were "sales vs non-sales" and "science vs non-science." From the total sample, two subgroups of individuals were identified, using their answers to these two items. The first included 101 men who marked the opposing extremes, "sales, non-science" as descriptive of their jobs; the other sample included 42 men who marked the other extremes, "science, non-sales." The following diagram shows graphically how these groups were selected and reports the number in each group:


Salesmen Sample
101
Scientist Sample
42
Sales X X X X X X X Non-Sales
25 17
101
Science X X X X X X X Non-Science

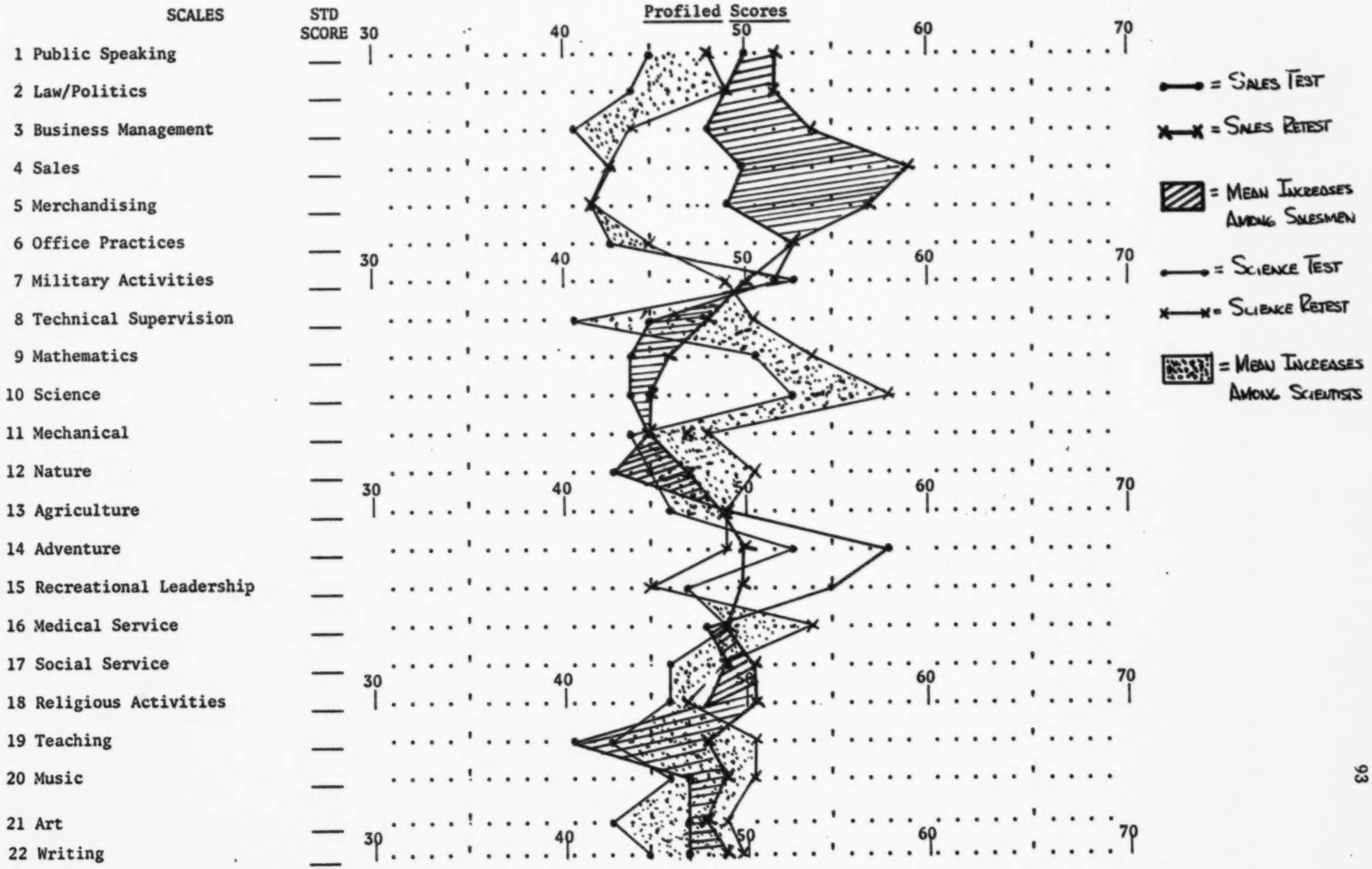
The test (age 16) and retest (age 52) SVIB Basic Scale profiles for these two groups are presented in Figure 3.

--Insert Figure 3 about here-----

Figure 3

NAME ________________ DATE ________ ID NUMBER ________

Test and Retest Profiles for Salesman and Scientist Samples



As the mean profiles indicate, the Sales and Science scales separated these groups fairly well at age 16 and by age 52 the difference had increased. At age 16, the differences were roughly one standard deviation, increasing to about 1.5 or 2 standard deviations between the adults. The larger differences between the adult samples were created because the salesmen increased more on the sales-oriented scales, the scientists on the science-oriented scales, not because either of them had decreasing scores. Whether these increases came before or after the occupational experience can't be determined from these data; the latter seems more plausible.

These mean differences on the Basic Scales, though large and statistically far beyond the chance level, were not as large as the differences between these two samples on the regular SVIB occupational scales. For example, on the SVIB Chemist scale, the samples had the following test and retest means:

CHEMIST SCALE MEANS

	Test	Retest
Scientists	39	43
Salesmen	26	17
Difference	13	26

SALES MANAGER SCALE MEANS

	Test	Retest
Salesmen	35	41
Scientists	27	20
Difference	8	21

These larger differences, exceeding 2 standard deviations among the adult samples,can probably be traced to the relative heterogeneity of the occupational scales compared to the Basic Scales. Each of these two occupational scales, Chemist and Sales Manager, contain both science and sales components. In the Chemist scale, these components are weighted positively and negatively respectively; in the Sales Manager scale, the reverse is true. Thus the occupational scales take advantage of both components for maximum separation, while the Basic Scales sacrifice some of this differentiation for easier interpretability. Note again that there were differential increases (and, contrary to the findings on the Basic Scales, actual decreases on the non-appropriate scale) on these scales for these two differing samples.

Construct Validity, Interest Constellations, and Implications

All three types of validity information reported here, content, concurrent and predictive, support the conclusion that these scores are related to occupational choice. Collectively, they also argue for the existence of the fourth type of validity that psychologists have found useful: construct validity. Construct validity refers to the concepts that underlie test behavior, concepts which may not be directly accessible for measurement but which provide some explanatory power for the parallel features of test responses and actual behavior. What follows here is a brief attempt to make psychological sense of these clusters of interests, and to suggest a mechanism to explain an individual's answers to these items.

The underlying concepts here are the related constellations of interests. Somehow, these constellations dictate, at least to some degree, the individual's feeling toward activities which fall within the bounds of the constellation. It might be fruitful in future research to consider an individual's answer to a specific item (and thus his feeling toward a specific behavior) as a combination of his perception of which constellation an item belongs to and of his attraction toward that constellation generally. Thus, the two salient variables are his evaluation of constellation membership for an item and his attraction for the activities within the constellation--in a convenient shorthand, "perception x attraction."

A clarifying example: a salesman would answer LIKE to the item "Sell Fuller brushes door-to-door" because he would perceive that as a sales item and he likes sales activities; a scientist would mark it DISLIKE because he also perceives it as a sales item and dislikes those activities. But if confronted with the item, "Work for the National Academy of Sciences, appearing before Congress, private foundations, and other prestige organizations, selling the idea that science must be broadly supported by our society," they both might answer LIKE as one would perceive it as a sales activity, the other as science. In this illustration, their perceptions might be modified substantially by substituting other verbs for "selling," such as persuading or, better yet, educating or informing.

This formulation of organizing constellations as the constructs underlying interest measurement is undoubtedly too simple, and only partially correct. Yet it does provide a way to begin to understand more than the empirical facts, to lead us out of the wilderness of means and correlations, and it has some immediate implications for the techniques of measurement:

1. If item perception is important, then item clarity is a paramount concern. Inter-individual agreement as to what an item means should be very high. This can be achieved in several ways: by using short, familiar items; by using longer, very specific items; or by using powerful stereotypes such as occupational titles.
2. It suggests that forced-choice items are too complicated. To ask a person to sort out his perceptions of three items in a triad, then to determine how he feels about each of these and compare those feelings is creating an unnecessarily complex task for him. Worse, it means the same pattern of answers could result from several different psychological viewpoints. While that is inevitable, no matter what method is used, it should be minimized. (Forced choice items may have some advantages in other contexts--but they have yet to be demonstrated empirically.)
3. The "perception x attraction" theory emphasizes that, to this point in history, we have paid little attention to the perception portion in interest measurement--all of the emphasis has been placed on the attraction aspect by requiring the LIKE, INDIFFERENT, or DISLIKE response. More should be done on perception, at least enough to determine if this way of thinking has any merit.

4. If the perception factor does prove useful, it might help explain the changes over time within a single individual as it would allow for two types of changes, one in perception, the other in actual attraction to the activities. Such a possibility is particularly appealing when studying teenage-to-adult samples as some of their differences may be traced to the teenagers' difficulty with the vocabulary. Perception certainly includes within it understanding; if a person doesn't understand an item, his perception will be affected. When understanding comes, his answer may change even though his attraction to that activity has not.

This brief, theoretical side trip illustrates one possibility of further research in clustering interests, and in understanding the results. After 40 years of fact gathering, we must have some organizing theory, especially since the computer has made it possible to carry empiricism to ridiculous extremes.

Use of the Basic Scales

This paper has been almost solely concerned with the construction and evaluation of scales to measure specific areas of vocational interests. An important next step is to learn something about the application of these scales.

For Counseling

Counseling textbooks abound with viewpoints as to how test information should be used with individual clients. Research on these viewpoints is much less common, and there are very few data to support answers to even the most obvious questions: "It costs about one dollar to administer and score a student's Strong--is it worth it?" or "Should an individual be shown his scores?" In general, opinions here vary inversely in intensity with the amount of available relevant information.

For Selection

The situation with the use of interest inventories in employee selection is not greatly different--the basic questions on how to apply the methods have not been answered, and the only acceptable applications currently depend on the presence of a skilled, well-trained professional.

While much more research on the effects of various approaches is necessary, in the absence of such information we suggest the following guideline:

> "These scales are reasonably accurate measures of an individual's interest in the specified areas. Anyone confronted with a choice of any of these activities, whether for training or employment, would be aided by this relevant information about himself. Professional psychologists faced with selection or placement decisions should find the results helpful in determining what activities an individual might find satisfying."

Though the Basic Scales should be useful in evaluating an individual's responses to the SVIB, they are intended to supplement, not supplant, the regular occupational scales. The regular scales still permit greater diversity and complexity in profile patterns than do the Basic Scales as the unique items remaining in the SVIB, not included in any of the Basic Scales, are important. It would be a serious mistake to restrict our measurements to these 22 factors in the belief that the valid variance in the interest domain has been covered, or even the valid variance in the SVIB item pool. Further research must push ahead to find other approaches, always with the intent of finding powerful yet parsimonious explanations of the organization of an individual's choices.

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